FLORIDA WILDLIFE®

Volume 44, Number 4

July-August 1990

They don't trash your home. Why trash theirs?

TOM EVANS

Stow trash until it can be disposed of properly on land.

FLORIDA WILDLIFE®

Volume 44, Number 4 **July-August 1990**

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Dee Smith's strikingly realistic rendition of a pair of purple gallinules is the winner of our cover art contest. A limited edition fine art print is available **free** when you purchase three subscriptions. See page 27 for details.

LAKE JACKSON

Management By Regulation

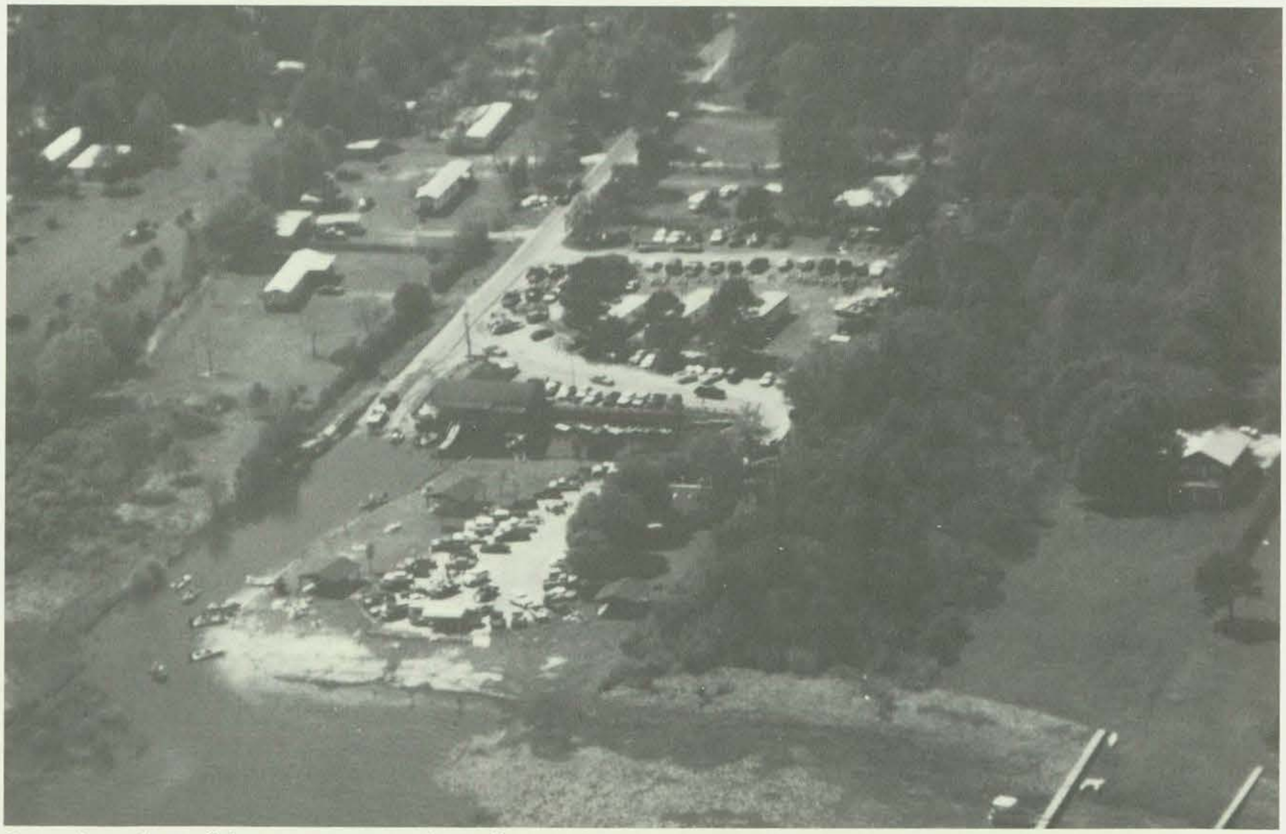
By Dan Dobbins

A protective slot limit will lead to more lunkers in this famous northwest Florida trophy bass lake.

Since July 1, 1990 anglers fishing for largemouth bass on Lake Jackson have encountered a new twist in an old game. Located just north of Tallahassee, this popular 4,000-acre lake has become the latest of several Florida waters to receive its own "personalized" bass harvest regulation. Under the new regulation, harvest of bass between 13 and 17 inches in total length is prohibited.

The special harvest restriction protects intermediate size bass and will increase the number of 3- to 6-pound fish produced in the lake. The regulation will allow anglers to continue harvesting overabundant small bass. Biologists believe the regulation ultimately will lead to increased numbers of trophy bass.

During the 1960s, Lake Jackson became famous as one of the premier trophy bass lakes in the nation. In addition to local residents, anglers from around the country traveled to Tallahassee to try their skill in landing one of the lake's many lunkers. Eight-pound bass were common, and some



From above, heavy fishing pressure on Lake Jackson is obvious.

monsters weighing up to 15 pounds were caught. According to some "old timers," it was common to catch several trophy bass in a single day. No one knows for sure how many trophy bass were caught from Lake Jackson during its heyday, but the total number must have been tremendous.

By the mid-1970s, however, a disturbing trend became apparent in Lake Jackson's bass fishery. Although trophy bass were still being caught, their numbers had declined sharply, and it was obvious that the glory days were over. What caused the emergence of this trophy bass fishery, and why did it decline so drastically after more than a decade? The answer can be found in a series of events which began in the mid-1950s.

In 1956 a few isolated pockets of water were all that remained of Jackson. Several years of below-normal rainfall coupled with the opening of a sinkhole in the lake bed had reduced the lake to a fraction of its normal size. Local ranchers built fences on exposed lake bottom and cattle grazed where water once stood. In 1957 a hurricane struck the Tallahassee area, and its heavy rains marked the beginning of the refilling of Lake Jackson that would take over 10 years to complete.

As the lake's water level rose, thousands of acres of dried lake bottom were reflooded. Aquatic plants grew and flourished on the newly reclaimed lake bottom, forming large expanses of vital habitat. Fish that had survived the lake's severe drying took advantage of the renewed habitat, and populations expanded rapidly. The drying and refilling of Lake Jackson resulted in a dynamic, highly productive ecosystem that ultimately yielded the large numbers of trophy bass that would make the lake famous.

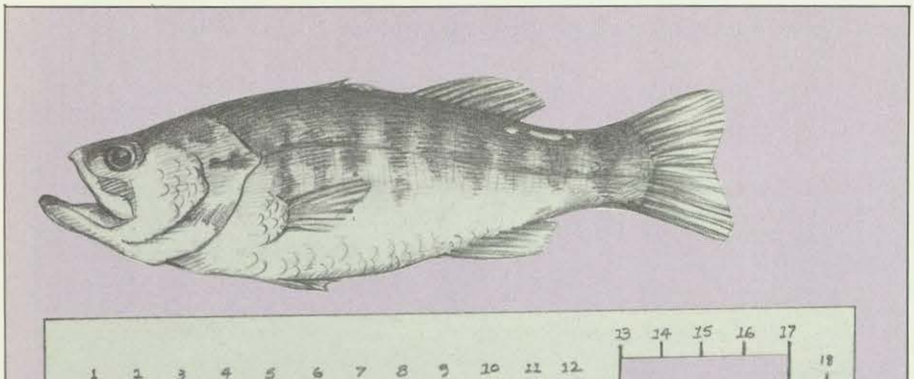
By 1966 Jackson's refilling was complete and the lake entered into a gradual, erratic dewatering trend that would take more than 15 years to complete. The lake remained highly productive for a number of years in the early part of this trend. However, the lake eventually began declining, as did the trophy bass fishing.

By the late-1970s a noticeable loss of aquatic vegetation had occurred, and by 1981 Jackson's plant community was virtually nonexistent. A layer of soupy organic muck now covered much of the lake's sand bottom and contributed to the loss of aquatic vegetation.

The sinkhole opened again in the fall of 1982, lowering the water level another 6 to 8 inches. At that point, the water was at its lowest recorded level in 25 years. Since then, water levels have increased greatly, and a refilling appears to be underway.

The conditions responsible for Lake Jackson becoming a trophy bass lake in the 1960s are present again today. Aquatic vegetation is abundant over much of the lake, and fish populations have increased dramatically in recent years. In addition, biologists were able to successfully reintroduce threadfin shad, an important forage species, into Lake Jackson. This species was abundant in the lake prior to 1956 but failed to survive the dewatering.

Lake Jackson seems ready to become another trophy bass fishery. But can anglers count on it? Biologists are uncertain. Factors exist today that could slow or even prevent this from happening. Tallahassee is no longer the sleepy little southern town of 25 years ago. The city's rapidly expanding boundaries may soon encompass the entire watershed of Lake Jackson. Along with greatly increased human population has come increased pressure on the area's natural resources. During a five-month survey in 1989, anglers spent over 40,000 man/hours on Lake Jackson fishing for largemouth bass. The total pressure for the entire year may very well have been twice as high. It takes 10 years for a bass to reach a trophy-class weight of 10 pounds. The odds of a fish living that long are low, even under the best conditions. Under heavy fishing pressure, chances are reduced even further. ▷



Bass between 13 and 17 inches must be released.

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Porter Sink opened in 1982, exposing several hundred acres of lake bottom.

Heavy fishing pressure is not the only factor affecting production of trophy bass. Today's anglers have also benefitted from technological advances in tackle that were not present several decades ago. Ultrasensitive boron rods and reels with high-speed retrieve and magnetic anti-backlash devices are just a few innovations that have increasingly tipped the odds in the angler's favor. Books promising to turn even the greenest angler into a bass' living nightmare line the shelves in bookstores, and videos tout the deepest secrets of sophisticated bass fishing gurus.

The size of bass that anglers harvest can have a major impact on the bass population in a lake. Many anglers will release smaller bass and restrict their harvest to larger fish. In extreme cases this practice can result in a lake becoming overcrowded with small bass. When insufficient forage is present, the growth rate of bass of all sizes slows.

Looking east above Lake Jackson in 1982. Water is draining into Porter Sink near the center at east end of rectangular field.

NW FLORIDA WATER MANAGEMENT DISTRICT

Eventually the population can become stunted and slow-growing.

The effects of heavy fishing pressure, increased angler sophistication and selective harvest on the future of Jackson's bass population concern both anglers and fisheries biologists. In response, the Game and Fresh Water Fish Commission implemented the protective harvest regulation requiring release of all bass between 13 and 17 inches in total length. The main objective of the regulation is to increase the number of bass weighing from 3 to 6 pounds. These are typically the fish anglers enjoy catching. Biologists believe that increasing the number of quality fish will eventually increase the number of trophy bass.

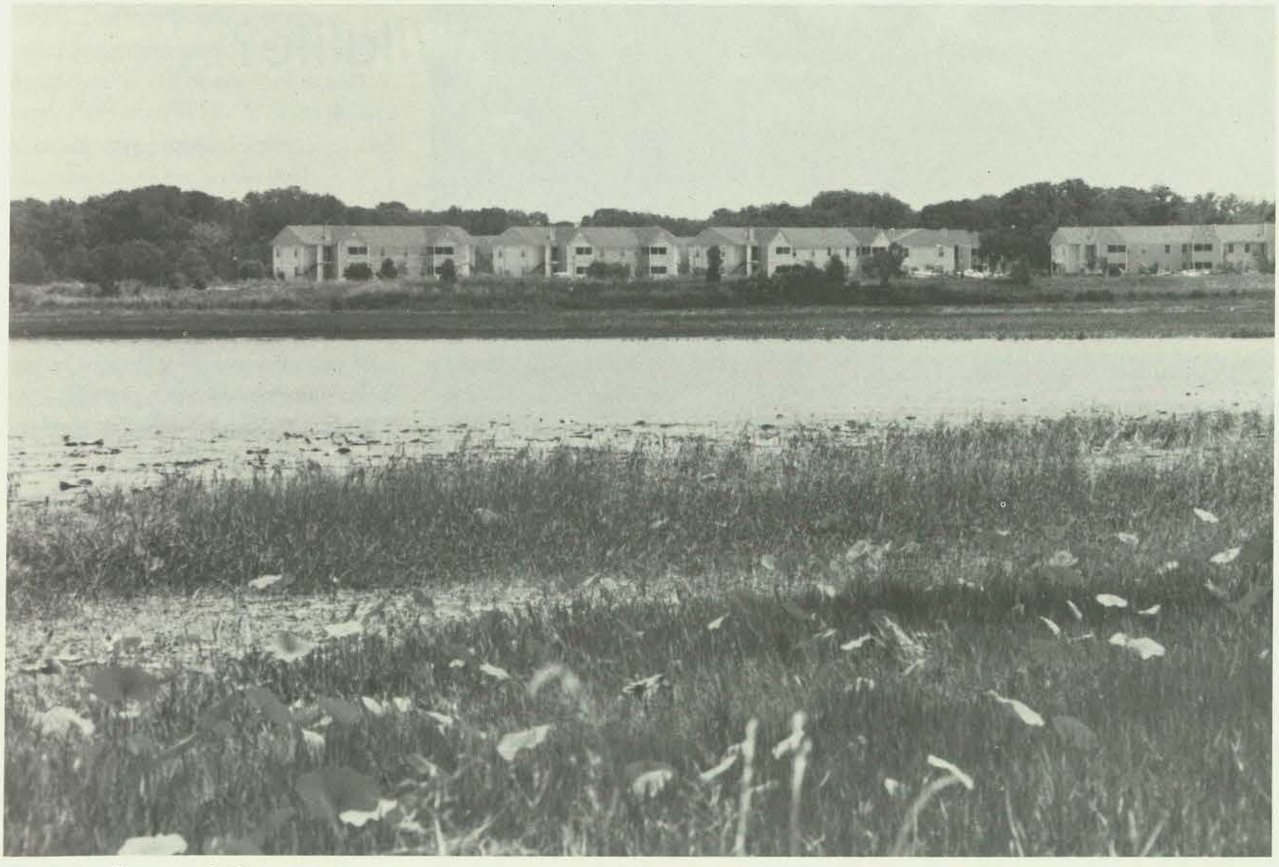
While the protective slot limit is a positive step toward ensuring the future of a healthy bass fishery in Lake Jackson, it is only part of the solution. Anglers will play a vital role through their compliance with the regulation. The bass population in Jackson is dominated currently by an overabundance of bass less than 13 inches in length. However, over half of all bass harvested are slot-limit-size fish between 13 and 17 inches long. This indicates that anglers are releasing too many small bass and targeting larger size fish for harvesting.

Anglers can do their part to help the bass fishery by harvesting more bass under 13 inches. Competition for food by these small fish is keen. Keeping more of the smaller bass should reduce competition and increase growth rates. Failure to remove enough small bass, however, could result in too many fish growing into the protective slot limit and creating what biologists call "stockpiling." When this happens, growth rates slow for all size bass, and the population eventually becomes stunted.

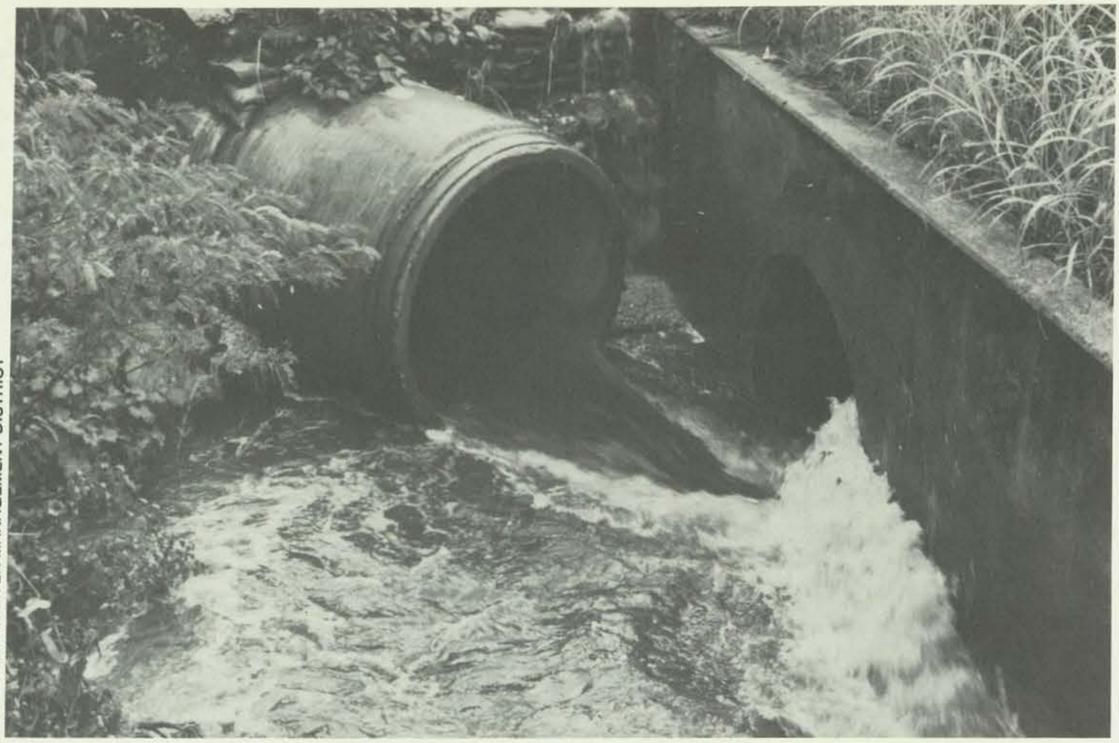
The benefits of the slot limit will not become apparent overnight but will take place gradually. Early increases in the number of quality-size bass will be determined by the number of bass protected when the slot limit goes into effect. Further increases will come as small bass grow into the protective slot limit size, eventually emerging as larger fish. These increases will take years to occur.

No one can say for certain what the future holds for Lake Jackson's bass fishery. Modern fishery science could stimulate a comeback to the days when the lake's trophy bass were "a dime a dozen." If so, part of the credit will belong to those anglers who support and cooperate with a "new twist in an old game."

Dan Dobbins is a fisheries research biologist with the Ochlockonee River Watershed Project.


BILL BURGIN

A recent photograph shows development at Lake Jackson's edge.


NW FLORIDA WATER MANAGEMENT DISTRICT

Urban Stormwater Runoff

A Threat to Fish and Wildlife?

By Perry Oldenburg

Every time a new house or shopping mall goes up, the potential for washing excessive amounts of rainfall into lakes, streams, rivers and wetlands many miles downstream increases. This stormwater (surface water runoff) may carry pollutants harmful to fish and wildlife that live in and use the downstream waters.

To understand the impact of stormwater runoff on lakes, rivers and wetlands, let's look at the land before it's developed. When rain falls upon a forest, much of the water falls on the leaves and branches of trees and plants. This rainfall has two potential fates: evaporate into the atmosphere or gradually drip to the ground.

Path of Rainfall

Once on the ground, rainfall may take one of several paths. Rain may be absorbed by the leaves and other organic litter, evaporate, or be taken up by plants and transpired into the air. Some rainfall percolates into the ground to follow one of two primary courses. It could be absorbed by the roots of trees and other plants and either remain there or be transpired by leaves into the atmosphere. If not absorbed by roots, the water will percolate through the ground to replenish an aquifer, a layer of underground sediment or rock where pockets of water are stored. Aquifers are our primary source of fresh drinking water in most of Florida.

During and following storms, excess rainfall runs off the land and generally flows into a stream, pond, lake or other body of water. In an open watershed basin, rainfall runoff may enter a stream, wetland, pond or lake which may flow into another series of lakes, streams, wetlands and rivers and may eventually enter the ocean. If the basin is closed, the stormwater runoff will enter a waterway and go no further.

When land is cleared and covered over with an impervious surface, such as homes, shopping malls, parking lots or roads, the path of rainfall is severely restricted, and the water is no longer collected in trees or absorbed into the ground.

Such rainfall has only one primary path, that is as stormwater runoff. The paving and development of land changes the characteristics of the stormwater runoff in several ways. The peak flow of stormwater runoff is increased many times when land is developed and is generally the cause of temporary flooding during and following storm events. Stormwater systems are designed to lessen the flooding caused by peak flows.

When land is developed, the total volume of stormwater runoff is greatly increased. If this intensified stormwater volume enters a lake or wetland, the total amount of water will also be increased, raising the elevation or flood stage of the waterbody and affecting its aquatic life and plant communities.

Pollutants In Stormwater

When stormwater washes over parking lots, buildings, roads and lawns, it collects man-made chemicals that contaminate the runoff. Automobiles leave motor oil, gasoline, antifreeze, tire rubber and other pollutants on driveways, roads and parking lots. Lawns, golf courses and parks are sources of herbicides, pesticides, fertilizer and animal waste. Airborne pollutants accumulate on the roofs of buildings and other structures. Herbicides and pesticides used on lawns and gardens and washed by rainfall in stormwater can be toxic to fish when concentrations are high enough. Nutrients, including phosphorus and nitrogen compounds, are generally major pollutants in urban stormwater runoff. Rainfall washes these pollutants as well as sand and sediments into lakes, rivers, wetlands and other waters.

When stormwater is "enriched" with nutrients, it results in accelerated eutrophication in the receiving lake or wetland. Eutrophication is the process whereby increased nutrient input causes plant growth, which causes the waterbody to fill in or "age" more quickly. Gamefish in relatively sterile lakes might initially benefit from the increased productivity caused by the increase in nutrient input. But, as eutrophication continues and algae and other plant growth begin to choke the lake, gamefish are replaced by less desirable rough fish. In a highly eutrophic lake, fish and other aquatic life may suffer or die from lack of dissolved oxygen in the water.

Heavy metals such as lead, chromium, mercury, copper, cadmium, arsenic, nickel and zinc are some of the primary pollutants in urban stormwater runoff. The heavy metal component of stormwater runoff poses a threat to the fish and wildlife which inhabit the lakes, wetlands or rivers receiving this polluted runoff. These heavy metals accumulate in fish and other aquatic organisms and may be toxic to these organisms in high enough levels. If mercury levels become high enough in sportfish, they present a health hazard to people who consume the fish. Birds, reptiles and mammals that feed on the contaminated fish and other aquatic organisms will bioaccumulate certain heavy metals to even higher levels, which may be harmful to these animals.

Increased Volume of Stormwater Runoff

The increased volume of stormwater runoff resulting from urban development may seriously impact the receiving lake, wetland or river. Wetland plant communities depend on certain levels of water inundation for a certain duration, a concept called a hydroperiod. When ▷

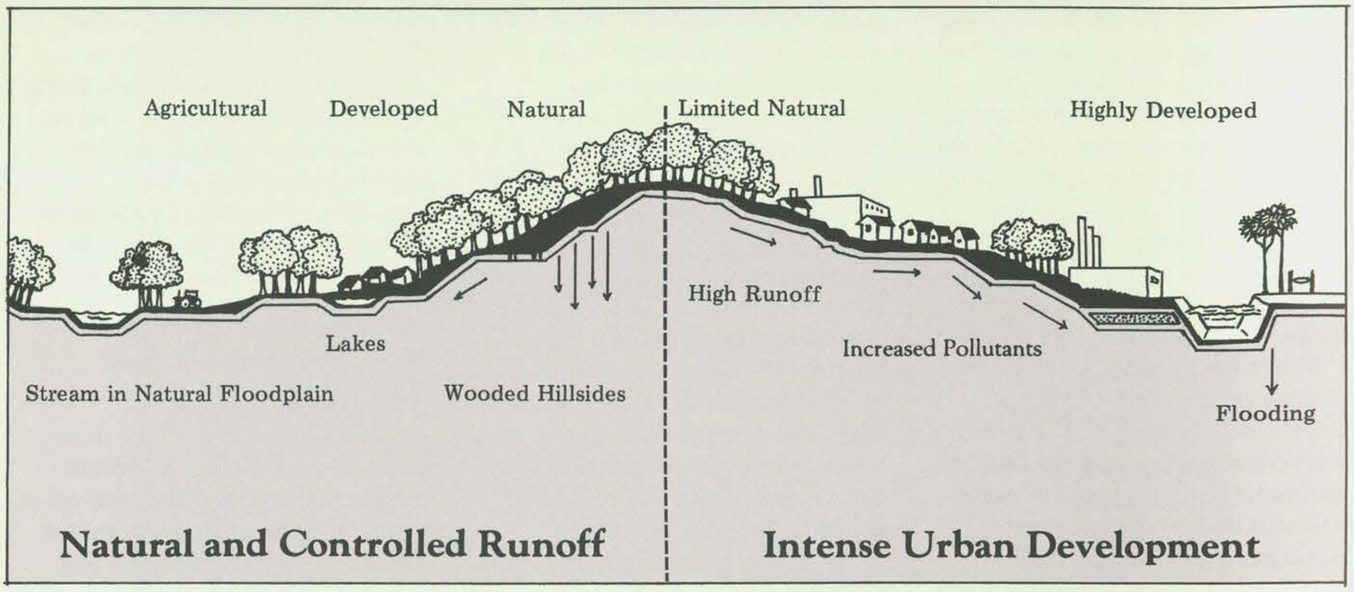
PEGGY PERKERSON

Nearby development may result in temporary flooding after heavy rains.

NW FLORIDA WATER MANAGEMENT DISTRICT

STORMWATER RUNOFF

From Water Resources Atlas of Florida, edited by E.A. Fernald and D.J. Patton.



stormwater runoff significantly increases the depth of water in the wetland or increases the number of days the wetland is flooded, the plant communities of the wetland are changed. For example, increasing the water depth and duration of flooding within an Everglades water conservation area has caused wet prairies and tree islands to be dominated by less desirable plant communities.

Excess volumes of stormwater flowing into wetlands may adversely affect the germination of trees. Cypress, blackgum and red maple trees require unflooded, moist soil to germinate and grow new seedlings. When wetlands are continually flooded these tree species cannot propagate, and may even die from excess water.

Effects on Wildlife

Changes in the normal water level and duration of flooding in a wetland can also have a negative influence on wildlife which depend on the wetland. An example is the wood stork, which nests on the branches of live cypress trees or other live wetland trees. When the magnitude and duration of flooding is increased in the wetland in which the wood storks nest, the cypress trees are killed and the branches fall off, causing the wood storks to abandon the nesting areas.

In addition, an increase in stormwater runoff can hinder the wood stork in obtaining food during the regular, periodic drying of wetlands and ponds. The endangered wood stork uses tactolocation, or groping, to find its prey, generally fish, amphibians and invertebrates. The stork is most effective in feeding when its prey is concentrated in shallow pools and ponds. The success of wood stork nesting is dependent upon high densities of prey being concentrated in shallow ponds during nesting season. Therefore, if increased stormwater runoff in urban areas prevents wetlands from drying normally, this could seriously hinder wood storks' foraging and thus impact their nesting.

Increases in urban stormwater runoff entering a wetland also affect the populations of small fish, freshwater shrimp, crayfish and amphibians. Many of these species are dependent on the regular drying cycle of the wetlands. If an increase in stormwater runoff causes the wetland to be permanently wet and become more of a pond or lake, then the composition of species inhabiting the wetland is likely to be altered. This change in composition of species may in turn affect wading birds that forage in the wetland.

Much of Florida's urban stormwater runoff flows into estuarine and marine ecosystems that flow into the ocean and can severely disrupt either ecosystem by lowering the salinity. Dramatic alterations in salinity by freshwater discharges can cause substantial changes in the abundances and composition of bottom-dwelling animals in an estuary.

Stormwater Regulations

The Florida Department of Environmental Regulation (DER) and water management district regulations partially address water quality and flooding problems. New developments are usually required to install a system that detains or retains either the first one-half inch or first inch of rainfall, when most pollutants are flushed out. As the rainfall continues, there are fewer, less-concentrated pollutants. Detention systems catch, temporarily hold, and then gradually bleed the stormwater off into a man-made channel or stream. These systems do not reduce the volume of stormwater runoff generated by urban development. Most detention systems have some type of filtration to remove some of the pollutants from the stormwater.

On the other hand, retention systems contain a certain volume of stormwater runoff that is percolated through the soil into groundwater. Soils with a high percentage of sand

and loam provide the most rapid infiltration rates for retention systems. These soils filter some of the pollutants from stormwater. Retention systems recharge groundwater supplies while preventing excess volumes of stormwater from entering streams, lakes, wetlands, rivers, estuaries and marine ecosystems.

Solutions to Problems

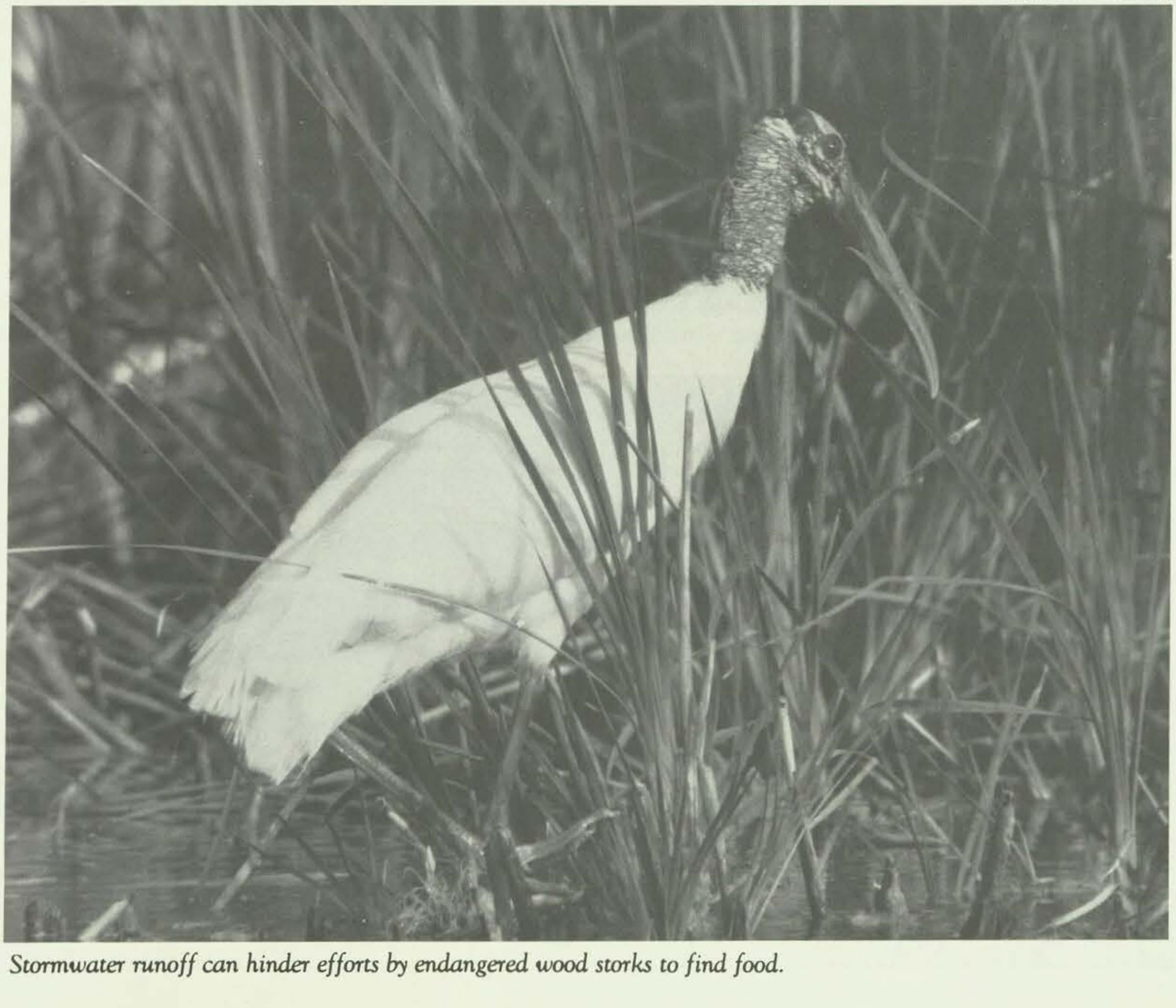
Yet, the regulations of DER and most water management districts generally do not address the increased volume of stormwater runoff caused by new development. In order to protect our fish and wildlife resources, tougher stormwater regulations are needed. For example, post-development runoff volume should not exceed pre-development volume in new construction sites. This could be achieved by using on-site retention rather than a detention system. Properly constructed retention systems would work on the vast majority of sites in Florida. Another stormwater management technique gaining popularity is water harvesting, that is, collecting runoff and using the water for irrigation or other positive uses. An example of water harvesting is golf courses that catch and store runoff in ponds and then use it to irrigate the greens.

If the soil on a site is unsuitable for a retention system, a more innovative system, such as an artificial forested wetland, could be created. With this system, at least part of the stormwater runoff could be transpired through trees and other vegetation. Stormwater runoff problems from existing urban and suburban areas could be addressed by the creation of intra-basin retention areas or the creation of artificial wetlands. Quality wetlands should not be used for stormwater detention because the increased flow of stormwater can alter the hydroperiod of the wetland, thus damaging the wetland's existing plant and animal communities. Drained or other severely degraded wetlands may be used for stormwater detention and may actually benefit if the proper hydroperiods are restored and sediment is removed from the stormwater prior to entering the wetlands.

Local governments and concerned citizens can work together to create and adopt stormwater ordinances that more effectively manage volumes of runoff and the pollutants that it carries. Stronger regulations are needed to ensure ecologically sound management so that the stormwater problem is not just swept downstream, endangering our lakes, wetlands and estuaries and ultimately our fish and wildlife.

Perry Oldenburg is a wildlife biologist in the Commission's Office of Environmental Services in Tallahassee.

CHARLIE HEIDECKER



Stormwater runoff can hinder efforts by endangered wood storks to find food.

Delicate Balance

Species: Red wolf (*Canis rufus*)

Federal Status: Endangered
Florida Status: Extinct in the wild

The red wolf has been gone from Florida since the 1920s, a victim of intense persecution as a perceived vicious predator, dangerous to both humans and domestic livestock. That reputation, however, was altogether unjustified. Red wolves have never been known to attack humans, and their primary prey are small mammals (rabbits, rodents, raccoons, etc.) rather than larger animals. Nevertheless, they were killed at all opportunities. There was even a $5 state bounty on wolves, as well as Florida panthers and black bears, for a period in the 1880s.

Originally, there were three subspecies of the red wolf. The one that occupied Florida was called the "Florida black wolf" because of its considerably darker coloration than the tawny red of the others. The black wolf, along with one of the other subspecies, is now altogether extinct. The third was reduced to 17 animals in the early 1970s, restricted to a tiny range in extreme southeastern Texas and adjacent southwestern Louisiana, where they were being further imperiled as a species through interbreeding with coyotes. In an effort to forestall the species' imminent extinction, the U.S. Fish and Wildlife Service removed all red wolves from the wild at that time and initiated an intensive captive breeding program. As a result, an estimated 115 red wolves now exist, distributed among a number of captive breeding facilities and a recently introduced wild population of 15 to 20 in North Carolina. Nine are in Florida: a pair and their two puppies in a compound on St. Vincent Island National Wildlife Refuge, three yearlings in the Tallahassee Junior Museum (offspring of the St. Vincent pair) and an adult pair at the Lowery Park Zoo in Tampa. The two Florida pups were born on April 23.

The red wolf is intermediate in size between the coyote and gray wolf, the only other *Canis* species native to North America. Adult males range from 60 to 80 pounds, adult females 40 to 60 pounds. Red wolves breed once per year, usually in February or March. The gestation period is 60 to 63 days, and the April-May litters average 4 or 5 puppies but range from 2 to 8. They use either natural or excavated dens for shelter and birthing. Both parents participate in rearing the young. Puppies first leave the den at 5 to 6 weeks of age.

Red wolves do not form social "packs" like gray wolves, but do mate either for life or until one member of a pair dies. The young they produce each year usually are gone by the following year's breeding season. Occasionally, however, a yearling will remain through another season. Primary habitat is forest lands, both upland and bottomland, but they also can occupy coastal marshes and prairies.

Should the red wolf ever regain its vital role in the ecosystem, even in localized situations, negative public attitudes about co-existing with wolves (the "Little Red Riding Hood Syndrome") must change. The innovative recent release of red wolves in North Carolina's Alligator River National Wildlife Refuge shows promise in that regard. The local citizenry, including the hunting public, is very supportive of that program, a product of effective prerelease public relations efforts. The Great Smoky Mountains National Park in Tennessee and North Carolina has been selected as a second re-establishment site, with a third, and perhaps even more, to be selected in the future.

— Don A. Wood
Endangered Species Coordinator

PEGGY PERKERSON

Poison Ivy

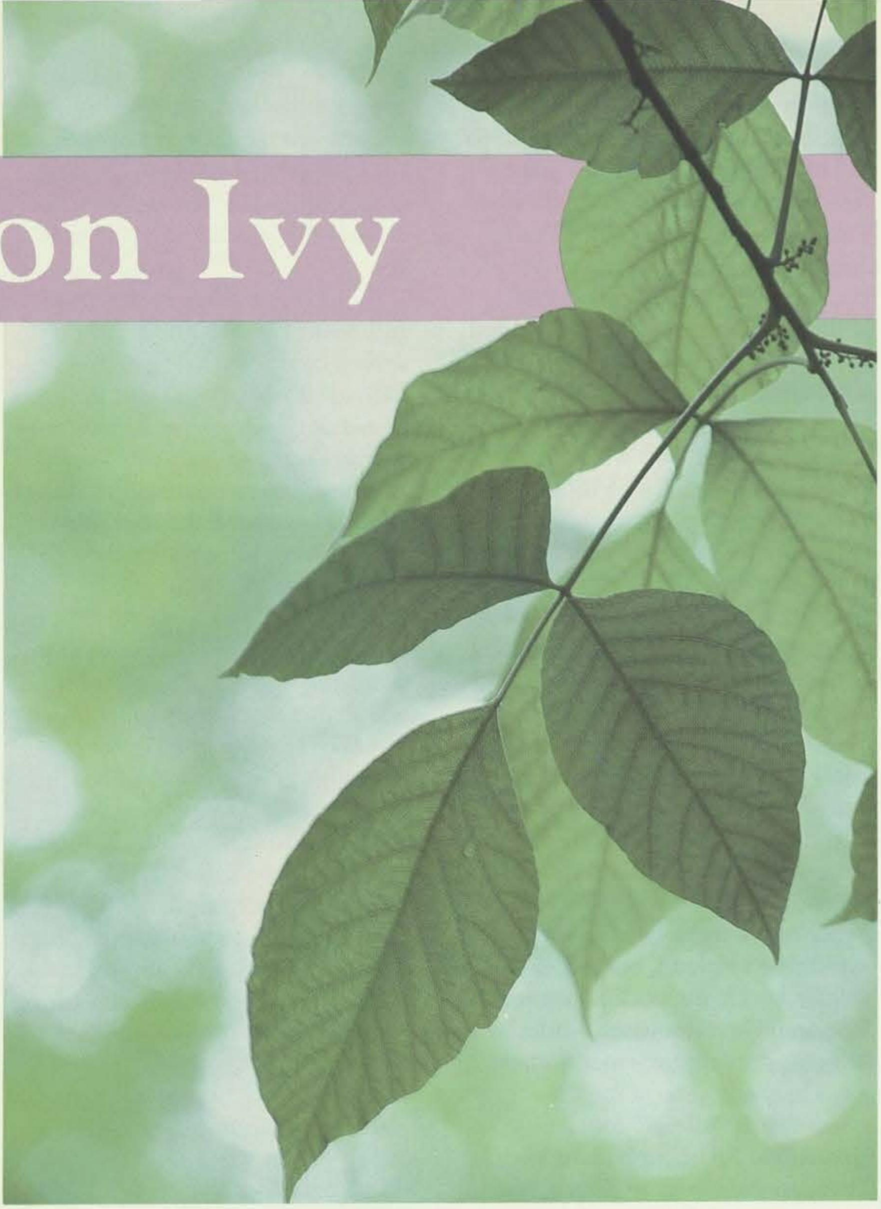
Text and Photographs by Michael F. Havelin

Easy to get and hard to get rid of, poison ivy is truly the ubiquitous noxious weed. Most of us have had a touch of its effects at one time or another, especially those who spend a good deal of time outdoors hiking, camping or gardening. Have you ever pulled into a campsite and started to set up your gear at dusk? You may have checked for that anthill under your tent, but what about the ground cover nearby, or what was growing up that tree where you were going to hang your hammock?

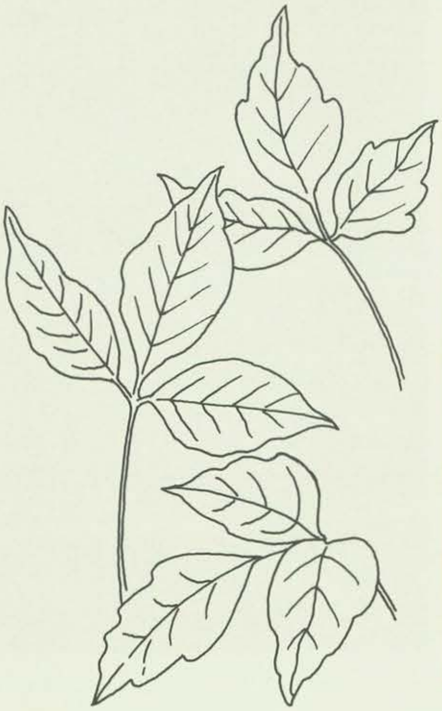
And then after arriving home from a great trip, you ask yourself what's this rash on my forearms and calves? When was I exposed to the dreaded ivy? I never even saw it. Where's the calamine lotion anyway? Oh no, the bottle's dried up!

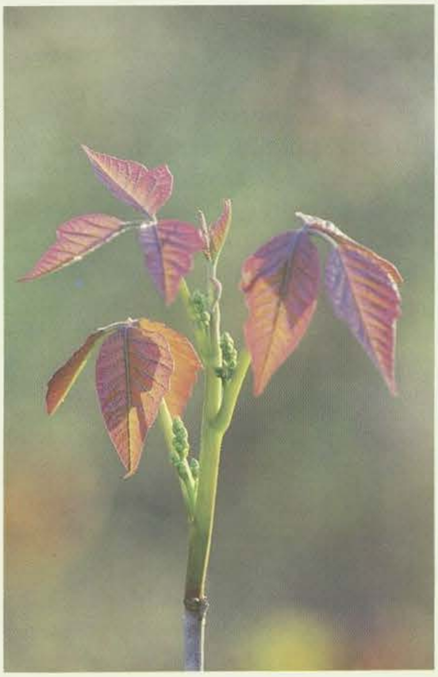
How can poison ivy get to us? Somehow, the plant's dangerous ingredient, urushiol, which permeates every part of the plant, has to be physically transferred from the plant to our skin. This can happen in a number of ways, directly or indirectly. An example of a direct transfer is when we brush against the plant on a hiking trail and the bruised leaves or stems actually touch us.

Many people are exposed through indirect methods. We might pet our dog or cat after they've been through a patch of the stuff. Their fur protects their own skin, but stroking the fur transfers the oil to us. Or, when we've been through poison ivy, we might transfer the oil from our clothes to ourselves in the process of taking our clothes off to ▷



Poison ivy in summer (above), spring (below right) and in various leaf shapes (below left).





wash them. It doesn't take much. Garden tools that have been used to dig up the plant will have a great deal of urushiol on their surface. Fishing rods, hunting rifles, and camping gear that have been in contact with the plant are other sources of contamination. Even golf balls that have zipped through the stuff are carriers.

The toxin remains effective throughout the year, whether the plant is starting up with its sap flowing in the spring, or when the leaves are long gone. Don't laugh too hard when that mid-winter pile of dead-looking poison ivy is going up in a blaze. You may be breathing urushiol vapors in the smoke. Be prepared for some serious problems. Fighting brush fires is particularly hazardous duty because of this, and exposure via smoke can result in dermatitis all over the body, terrible lung effects, and swelling shut of the throat, which can be life-threatening.

Strangely enough, it's not the weed that's at fault, but our own bodies which are working against us. Poison ivy's resinous oil works by triggering an allergic reaction from us. The medical term for the condition is "allergic contact dermatitis." Although many people claim an immunity to poison ivy, only about 15-20 percent of the population actually are genetically tolerant to urushiol. The rest of us run the risk of becoming sensitized to this substance from our first exposure, reacting more and more strongly to it with every subsequent contact. Some people become super-sensitive and must avoid the plant completely by covering all their skin when outdoors or by avoiding outdoor recreation altogether. Your regular allergy shots normally won't prevent this localized type of reaction.

Urushiol actually penetrates the skin within 10 to 20 minutes after contact. If you can wash the exposed area right after contact, some say to do so with plain water. Using soap may remove the skin's natural protective oils and increase urushiol's penetration. Others recommend Fels-Naptha bar soap. There's still a good deal of controversy about whether to use soap or not, and about hot versus cold water. Regardless, once it's through the skin, you've got it, and no amount of scrubbing will save you.

Poison ivy's characteristic rash and blistering may not occur for several days, depending on the individual's sensitivity and the extent of the exposure. Once the symptoms do appear, they may be anything from a mild rash to blisters that ooze a clear fluid, localized swelling and, of course, that maddening itch. Contrary to popular belief, the rash doesn't spread by the fluid that seeps from poison ivy lesions. The clear liquid will dry to a yellowish crust which serves to seal the open wounds. Although poison ivy can't be spread by scratching, you may cause yourself a whopping infection. The area should be kept as clean as possible. Most people don't have the will power to avoid scratching their poison ivy sites, but infection is one of the biggest problems any time the skin's surface has been breached.

Okay, so you've got it. Now what can be done to make life a little less miserable? Not much, but the end really is in sight, for the reaction rarely lasts longer than 10 days. Treatments vary greatly but most center around the idea of calming the itch. Most doctors recommend that you *do not* use skin preparations that contain local anesthetics such as benzocaine, or irritants like phenol and camphor. Antihistamines won't work against the rash, but they may help you through an otherwise restless night.

The best treatments are still the old folk remedies. By far the best is made from jewelweed (*Impatiens capensis*), a plant that usually can be found growing in close association with poison ivy, particularly in moist environments. Collect a batch of it and boil the leaves and juicy stems in water for a few minutes, then allow the mixture to cool. Apply liberally as a preventative before venturing into the woods, or to the poison ivy lesions as a cleansing astringent after the fact. Euell Gibbons recommended freezing this infusion as ice cubes for a cooling treatment that lasts as long as you keep it frozen.

Another short-term comfort is simply running hot tap water over

The photographs below show fall foliage of poison ivy (left) and winter aerial roots (right).

the lesions. This serves to desensitize the skin in that area for a while. Thirty seconds of water as hot as you can stand it will calm the itch for an hour or so. An "ocean of calamine lotion" was recommended by the Coasters in their 1959 hit song "Poison Ivy."

Is there a way to avoid poison ivy? It's easy enough to recognize, even though it is a subtle foe capable of assuming numerous disguises. Three leaflets are the giveaway, although individual leaflets may be of different shapes, with varying margins. The leaflet margin, or edge, can vary from very smooth ("entire") to wavy ("undulate") or even jagged. Often the margins of the outer two leaflets will have at least one substantial notch.

This alternate tri-compounded leafed vine is very common in forested areas and is often found growing up the sides of Sabal palm trees. When in doubt, the "leaflets three — let it be" advice should be followed, as this is true for poison oak also.

Poison ivy's coloring is tricky, too. Some people will always look for a robust, dark, shiny green leaf with a slightly oily surface, but I've seen it as dry-looking as a maple leaf, or dusted over when growing next to a dirt road. In the spring, its delicate new leaflets may seem to be pale green or even pink when the morning sun is behind them. In autumn, the plant takes on a fiery look, blazing in beautiful reds, oranges and yellows that seem to beg to be included in a fall bouquet. Don't be tempted!

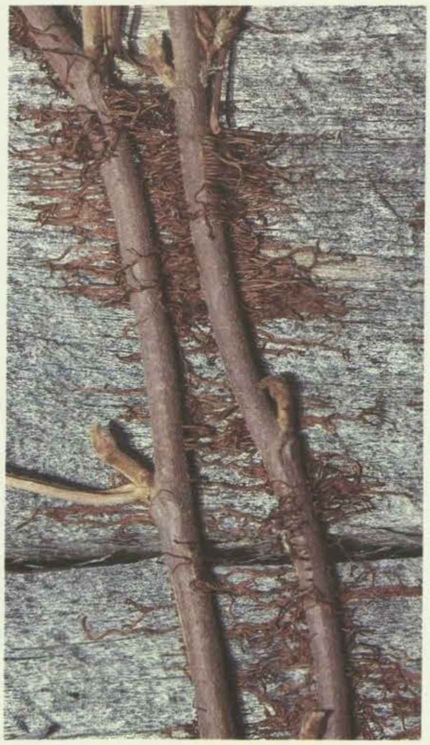
In addition to its coloring and shape disguises, poison ivy is a highly varied plant. It may be found as a ground cover, or as a traditional ivy climbing a tree or up the side of an old country building. In winter, look for its reddish aerial roots holding onto trees as the vine worms its way upwards. If poison ivy can't find some other plant to support it, it can grow on its own as a small bush or shrub. Once again, check for the characteristic leaflet pattern.

Poison ivy prefers disturbed soils such as roadsides or abandoned farm properties, but it can be found virtually any place there is water and a bit of sunlight. It has no preferred soil and can grow in loam, silt, sand or clay and do equally well. Given a toehold, it will even use a sheer rock wall as a substrate. Although it seems to avoid oak-hickory forests and dense stands of evergreens, be watchful in floodplains and bottomlands, on beaches and along the shores of streams and lakes.

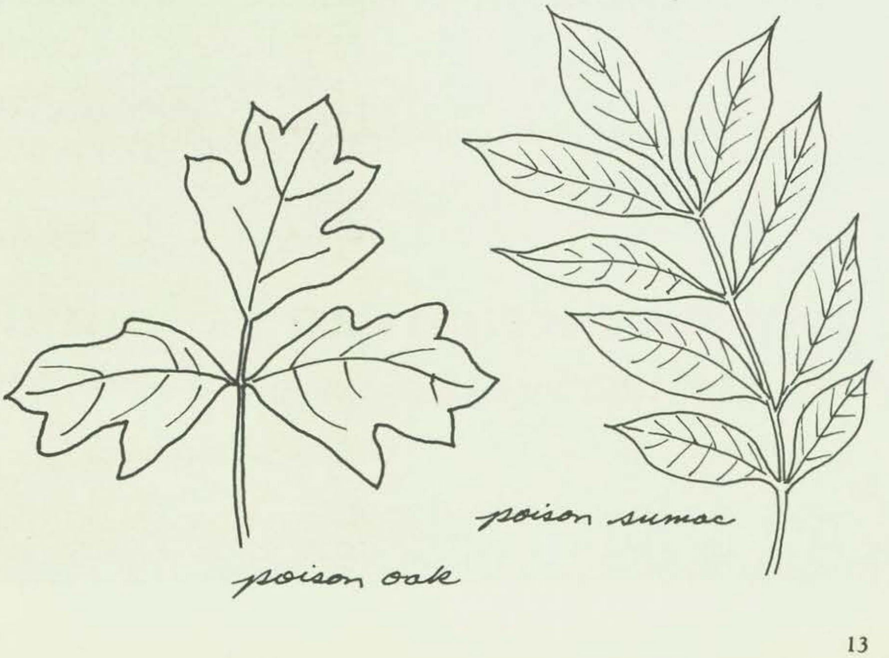
Poison ivy can be found throughout the continental United States and Canada, as far as south as Guatemala, into central China, and on the islands of Japan and the Bahamas. It seems to do particularly well in the middle Atlantic states of New Jersey, eastern Pennsylvania, Maryland, Delaware and Virginia.

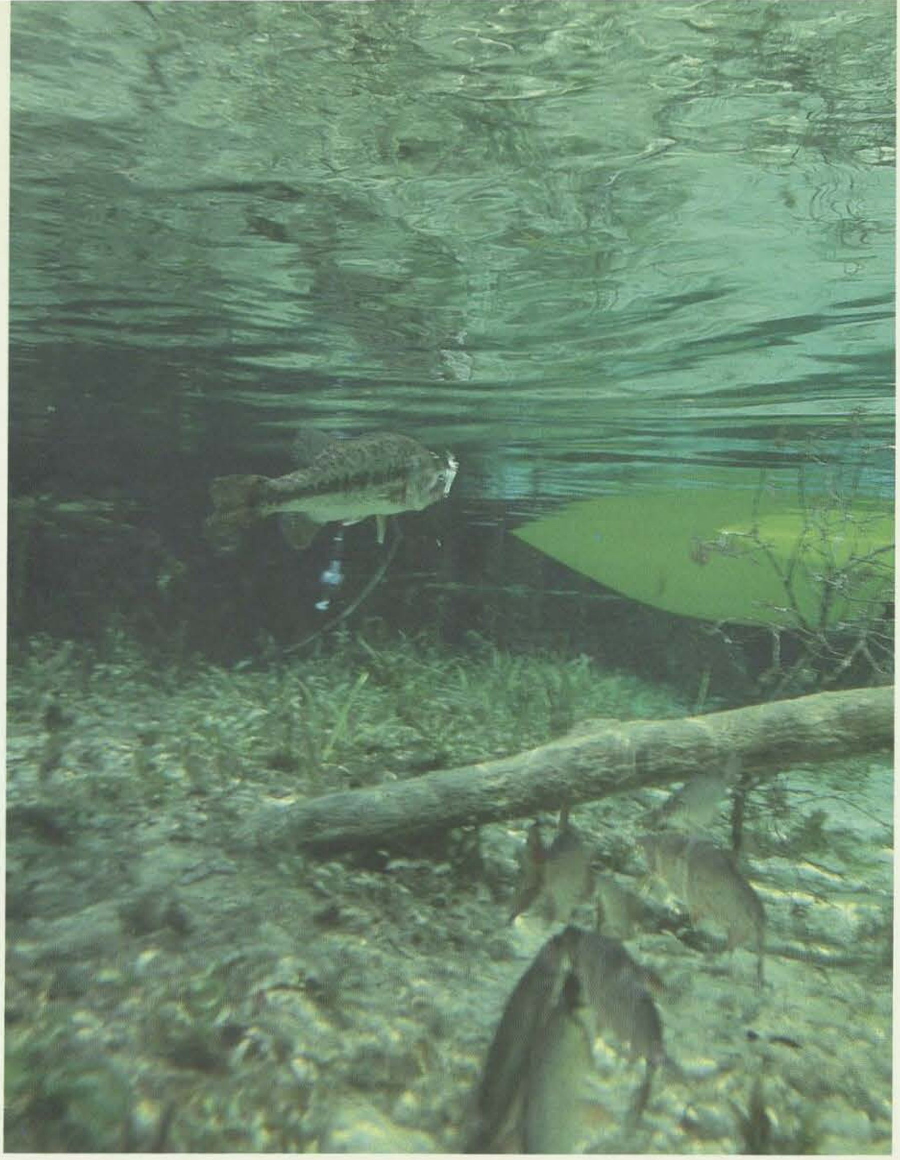
The best advice anyone can give you about poison ivy is to avoid it. Learn to recognize it in all its permutations. Dress appropriately and be especially careful in the woods at night. If you do get it, remember that although you have to suffer through it, at least it's not fatal.

Michael F. Havelin is an attorney and professional free-lance writer/photographer based in North Carolina.



Below: Poison oak also grows in leaflets of three. Poison sumac is a swamp-loving species more poisonous to the touch than poison ivy.





Shallow-Stream Largemouth Bass

Text and Photographs by Larry Larsen

Hot bass action can be found on little rivers.

Jumper Creek is a fishy place. The spring-fed creek meanders through a swamp basin and is difficult to follow, but there are plenty of largemouth bass in the narrow waters.

A friend and I caught several small bass in a two-hour trip up this scenic tributary of the Withlacoochee River. To get there, we boated through some of the backwaters of the Withlacoochee and finally made our way into what appeared to be pockets of water connected by a small discharge of spring-fed water.

The creek finally deepened and took on a more defined course. The water cleared and became less encumbered by weeds, which allowed the creek to widen and offer more fishable waters. My fishing partner and I made several casts into productive spots adjacent to the bushy bank from bend to bend. We moved the small boat along the creek with our trolling motor and caught bass at each turn.

Although largemouths up to 11 pounds have been taken from the 15- to 20-foot wide stream, our top fish was a 3-pounder. Even landing that one was not an easy task. The battle was confined to the narrow waterway, and the fish made its way from one snag to another until I lip-locked it at the gunwale. Huge bass are uncommon in most of the state's shallow-stream waters, but anglers come across lots of 5- and 6-pounders.

Another interesting Florida river with a few 5-pound largemouths is the Ichetucknee, near Branford. The beautiful spring is crystal-clear and provides angling opportunities over the lower three miles. I've built a cabin near the river, which has afforded me an opportunity to try my luck there.

Largemouth and Suwannee bass are both present in the Ichetucknee River. All bass in the clear waters are suspicious, due to the fact that they can easily see a lure and the angler at 40 feet.

On my first trip down the tiny stream, I was awed by the huge 100-year-old cypress trees that line the perimeter of the beautiful waterway.

Eel grass painted the sandy bottom, and fish scurried about as the boat drifted by.

We tossed plastic worms into the pockets, caverns and rock outcropping along the river that day and caught only two bass. We had several others follow the lure without striking it, and that definitely was the norm. Occasionally, two or three bass would follow a lure for 15 to 20 feet before turning back into the darkness near shore. In such highly traveled waters, that's not unusual. The fish are easily spooked and very particular about what they'll chase.

Most of the people who visit the Ichetucknee don't come to fish. Tubing is a popular pastime on the river, and most any day will find hundreds of people with inner tubes floating downstream in the 72-degree water. SCUBA divers and snorkelers frequent the river as well. All this human activity tends to push the larger bass into the nearby Santa Fe River. Bass residing in the crystal-clear Ichetucknee are usually less than 14 inches long.

Several small central Florida streams have, however, given up significant-weight lunkers. Bass exceeding 12 pounds have been taken from major spring runs such as the Homosassa, Oklawaha and Crystal, and many of the smaller runs which empty into these and other streams have big fish. Many are not well known for their fishing opportunities, yet in most, fishing can be outstanding.

I fished one small, spring-fed stream near Inverness that provided as much enjoyment as any trip I've taken. The tiny waterway is a tributary of the Withlacoochee River but has minimum fishing pressure. It meanders through grazing and marsh lands for five or six miles, and it's loaded with feisty bass. The winding run varies from shallows to open reaches of grassy flats or dense marshes, with springs throughout. The flow of the twisting river increases downstream.

Two friends and I dropped our canoes into the waters at the head of one of the springs. We quickly paddled over to the head spring, which was teeming with fish. Wearing polarized glasses, I was able to spot a bass of about 5 pounds as it moved from one dark cavern to another. A 5-mile-per-hour current pushed us past beautiful shoreline.

To fish the productive shoreline habitat, we maneuvered our canoes into quiet water and made our casts. At bushy bends, we were able to grab hold of a projecting branch near the pool we wanted to fish. As we guided our canoes around each curve, we found another potential bass hot spot.

My two friends took the lead in their canoe and fished the scenic spots. They were generally able to cast four or five times to each hole. I followed behind and fished the areas that they passed up while moving downstream.

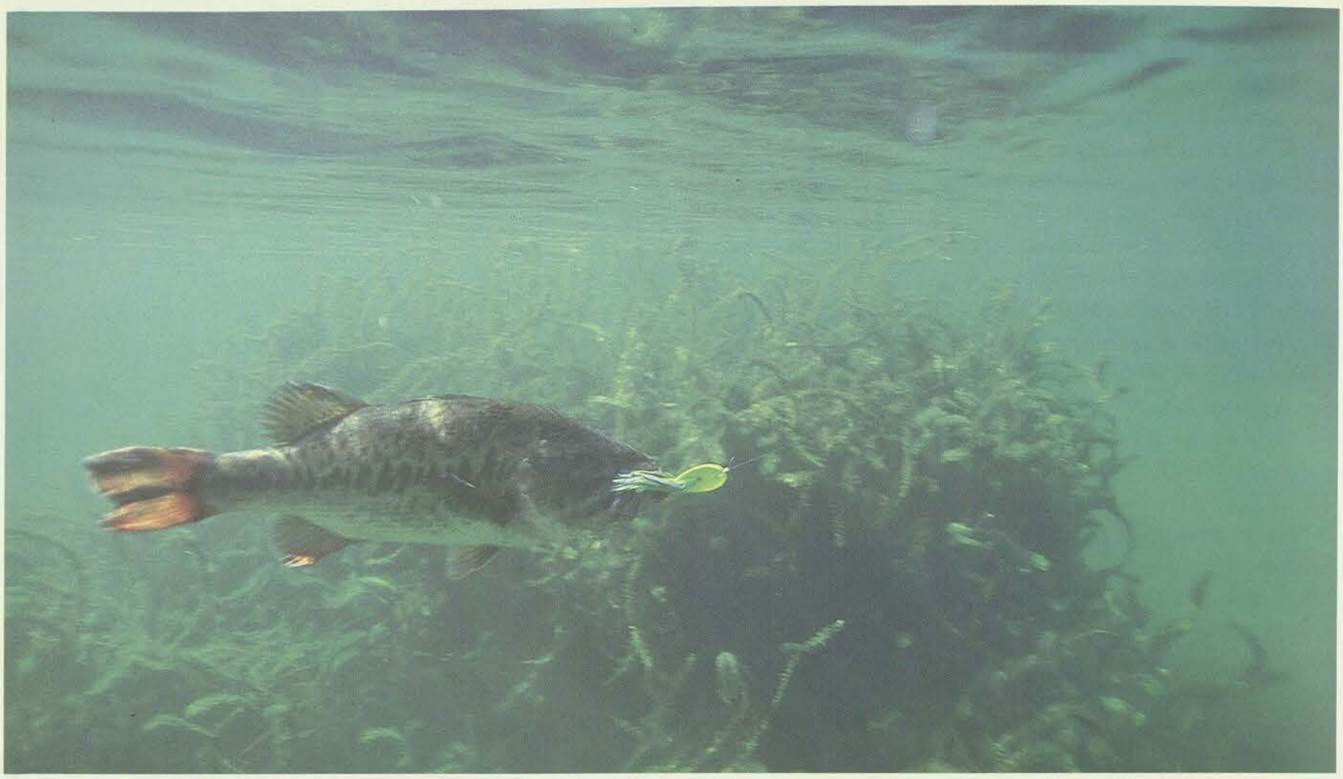
I paddled quietly to a productive-looking spot. Holding a tree with one hand to stabilize the canoe and prevent it from drifting downstream, I lofted a cast 25 feet to a spot beneath overhanging branches. The result was a solid strike and I set the hook. The feisty 2-pounder leaped three times as I watched the action both above and below.

I grabbed the fish and relieved it of the hook attachment. It swam off quickly. I began casting the quiet-water pools adjacent to the main spring run. The lone lunker that I had released came from such an area. I didn't really mind the fish spitting out the hook as it neared the boat, because the battle was exciting.

Several of the fish we caught that day pushed 2½ pounds, but most were in the 10- to 13-inch range, normal for bass in such small streams. Clear water generally isn't nutrient-rich and therefore does not afford a food base conducive to bass growth. Under normal circumstances, a maximum weight of 10 pounds is probable for a few bass in clear streams.

Stomach content analysis by fishery biologists reveals that in some cases 85 to 90 percent of the ▷

On most small streams anglers can find unpressured bass and quiet surroundings.



food intake of small-stream bass may be comprised of crayfish. The calcareous waters dictate a food chain which is somewhat unique to bass territories. Crayfish and other crustaceans, as well as smaller versions of the minnow family, are a mainstay in the diet of many of the spring run bass.

As I passed by the stretches on both sides of the runs, I cast plastic crayfish baits. The bass loved them. My partners stuck with their worms and also caught several bass over the following half-mile stretch. I paddled the canoe into heavy brush on the side opposite an overhanging tree. On my initial cast, a small bass followed the worm to the boat.

The second cast brought a strike and a 10-inch bass, and the following four casts resulted in four bass between 8 and 14 inches each. I watched each fish as it struck at my bait in the crystal-clear water and noticed additional fish following the plastic crayfish.

The action never really slowed that day. Around each bend was a new spot to fish, and the largemouths in it were clearly hungry. We kept four bass for the skillet, releasing the rest. The two-mile fishing journey down the shallow stream took about two and one-half hours and was far too short.

Special Tactics

Catching bass from such waters is not always that easy; special techniques are required. While some fish have seldom seen lures, most are well aware of their environment and of their accessibility to outside predators. Stealth is of paramount importance when approaching a good-looking spot. A minimum of noise may be necessary to sneak up on the bass. Banging on the canoe or boat with an oar or paddle, or a noise of any kind, can scare the fish immediately.

Plan your drift into each pocket so that you know where to position the boat and what to anchor to or tie to. Determine the area that you want to cast from and what obstructions you will have to cast around or under to penetrate the bass hideout. Have a small bait resembling the predominant forage ready.

Ultralight tackle is a wise choice for such waters. A spinning or spin cast outfit can provide efficiency when casting under trees and around branches, etc. Short, 5-foot rods are preferred by many anglers who fish the small waters, and lines testing 8 to 10 pounds are often used.

During high-noon sunlight when there's maximum visibility for the fish, correct selection of the lure color and action may be paramount. Cloudy days, however, and the early morning and late afternoon time periods on the often overgrown spring runs are more conducive to fishing any color of lure. To the more than 25 bass between the two boats caught and released that day, color didn't seem to matter much.

Small-stream largemouths are generally structure-oriented and seek out deep structure in which to live and chase food. Vegetation may be limited, but brush and fallen trees often provide shoreline cover. Since crayfish frequent rocky shoal areas and deep, undercut banks, these areas are where we most often find bass. Largemouths usually avoid high-current areas in preference to quieter water that is adjacent to or below the tumbling ripples.

Watching fish come out of nowhere to follow a lure should interest most anglers. Catching a couple of small bass that then take to the sky and try to throw the bait

Left: Clear streams afford excellent views of fighting bass. Right: They are healthy fish but rarely exceed 10 pounds.

is exciting too. Being able to view the battle in its entirety as the fish goes from the water to the air provides a memorable experience.

Although the fish may appear to be numerous and hungry, small waters such as these cannot stand a lot of fishing pressure. So, keep one or two for dinner, but release most of the fish you catch. They will be there when you return .

Fishing for shallow-stream largemouths can be an experience you won't soon forget. In Florida, we're fortunate to have such opportunities. Don't overlook them!

Editor's note: There's no fishing or boats (except canoes) allowed on the Ichetucknee River north of U.S. 27. There's seasonally good fishing below the highway, with access to and from the Santa Fe River.

Larry Larsen is a free-lance writer whose articles appear in numerous outdoor publications. His newest book, **Trophy Bass, An Angler's Guide,** *is his latest of seven in the BASS SERIES LIBRARY. Information is available from Larsen's Outdoor Publishing, 2640 Elizabeth Place, Lakeland, FL 33813.*

The Roseate Spoonbill In Florida

Text and Photographs by Lee Kuhn

"Spoonbills have long stirred the interest and admiration of man. Crude images of spoonbills are to be found among birds depicted on the walls of Neolithic caves in Spain, drawn by artists who have been dead for six or eight thousand years."

"In the tombs of the kings of ancient Egypt at Thebes, there are figures of spoonbills — the flat, spoon-shaped bill drawn as seen from above, but the remainder of the bird in profile."

"In a stone carving from the Han Dynasty (220-206 B.C.) a spoonbill is distinctly recognizable."

Robert Porter Allen compiled these references in his excellent work, *The Roseate Spoonbill*, published by National Audubon Society as Research Report No. 2 in December 1942.

Early man's admiration for spoonbills probably was based largely on the physical characteristics of the bird, especially its distinctively large, spatulate bill. Since the most beautifully colored species of spoonbill, the roseate spoonbill (*Ajaja ajaja*), occurs only in the Western Hemisphere, it was never seen by these early artists.

I have observed spoonbills in Africa (white) and in South America and Florida (roseate). While the white bird is certainly majestic and interesting, it cannot compare to the roseate spoonbill of the Western Hemisphere, certainly one of the world's most beautiful birds.

During the Pre-Victorian Era, large nesting colonies of roseate spoonbills were common along the Texas Gulf Coast, along both coasts and through Florida Bay into the Keys. There also were reports of these birds in the Panhandle of Florida.

The massive destruction of wading bird rookeries by the plume hunters of the Victorian Era took these beautiful waders to the brink of extinction. The resilient egrets and herons recovered fairly rapidly after the slaughter was stopped, but the more sensitive roseate spoonbills have not made much of a recovery. The bird is listed as a species of special concern by the Florida Game and Fresh Water Fish Commission. However, some expansion has been documented, particularly along Florida's east coast.

Spoonbills are highly social birds, desiring the company of their own species at nesting sites, as do most wading birds. This social nesting behavior, with large numbers of nests in a colony, obviously requires extensive feeding areas with ample food supplies.

For each of the past five or so seasons I have observed and photographed roseate spoonbills at two refuges in south Florida: Everglades National Park and "Ding" Darling National Wildlife Refuge.

Much has been said and written about the migratory habits of the roseate spoonbills' seasonal populations in these areas, but specific conclusions have not been drawn. However, in both locations the birds are migratory, and I have observed that all but a few birds arrive at the refuges in February and March of each year and depart in September and October. The unaccounted time is presumably spent at a nesting rookery perhaps in Cuba, Mexico or possibly in other parts of Florida.

The color change in the plumage of the roseate spoonbill as the bird ages has been well documented. Basically, the bird is almost entirely white during most of its first year. However, I have never observed a purely white bird in Everglades National Park or "Ding" Darling Refuge. The very light-colored bird in the center of the photograph on page 21 is about as light a plumage coloration as I have observed, and this bird is probably 12-15 months old.

It appears that fledglings remain at the nesting sites for the first year or

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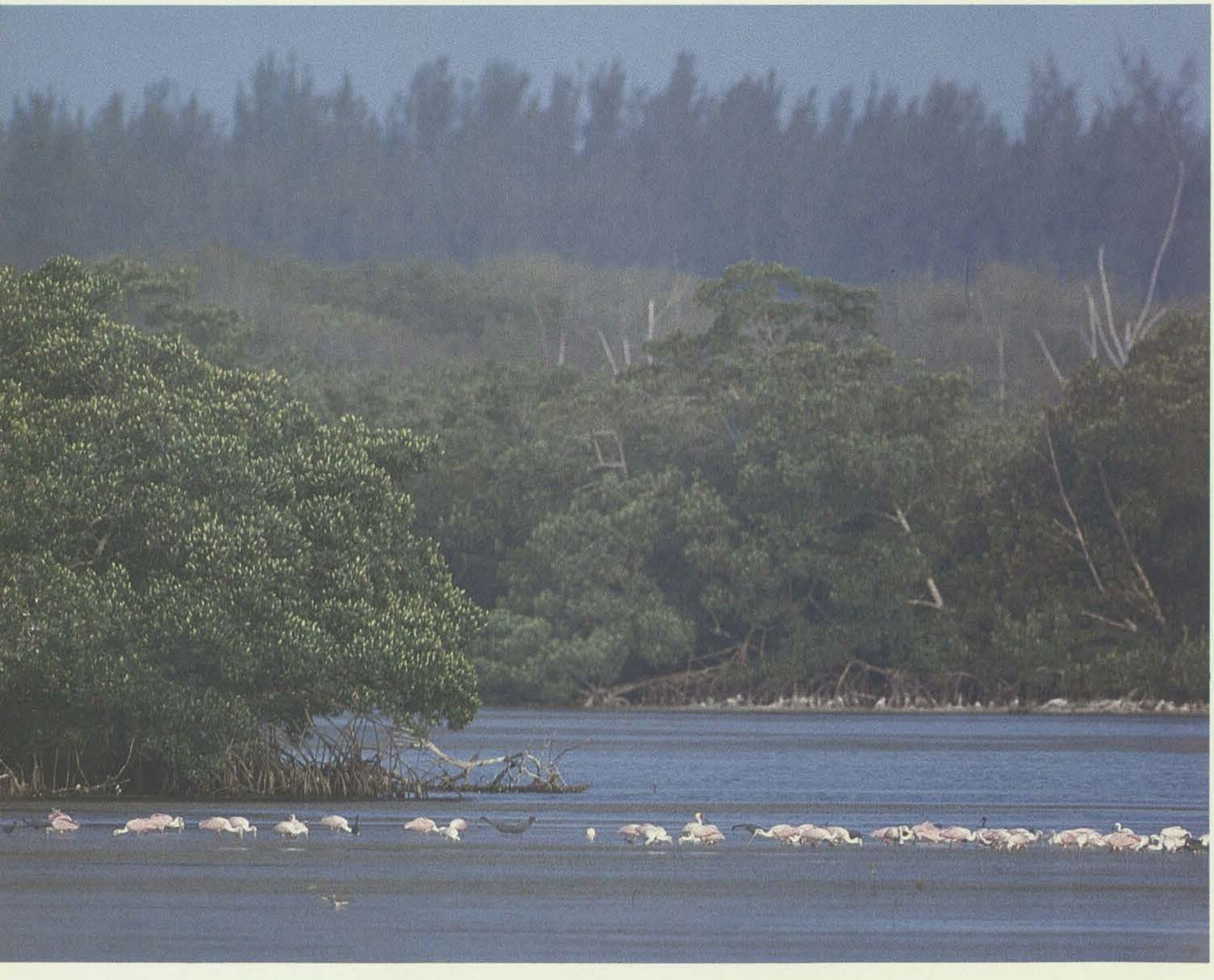
so while the balance of the colony migrate to the refuges to spend the better part of the year there.

For the past several years a very small flock (six in 1989) of immature individuals has fed, preened and played at nesting at Myakka River State Park during a short period in March and April. I once observed young birds not yet of breeding age in a presumed mock nesting area defending their nesting site against a pair of sandhill cranes. While it seemed unlikely that the cranes had any interest in the tree where the spoonbills were perched, it was encouraging that these sexually immature roseate spoonbills were exhibiting territorial behavior. Unfortunately, after another 10 days, the spoonbills left the park and did not return that season.

The roseate spoonbill uses tactolocation to find its food, using its sensitive bill rather than eyesight. The bird feeds in shallow water by swinging its head from side to side. When prey is detected, the tip of the bill snaps shut, and the bird swallows the small fish, crab or other marine life. The spoonbill's upper mandible is connected to a claw which meshes with a depression in the lower mandible when the bill is closed. The feeding technique of the flamingo differs in that it filters its food from large

The highly social spoonbills require extensive feeding areas with ample food supplies.



quantities of water using special teeth-like processes located along the circumference of the bill.

The roseate spoonbill's feeding technique requires water that is neither too shallow nor too deep and contains a good concentration of suitable fish or crustaceans. They often feed in shallow, brackish tidal pools surrounded with mangroves (see page 23). Mangroves are vital to such sites, their stilt-like roots provide an ideal site for the regeneration of food supplies. A flock will move progressively, following the highest concentration of food or in response to tidal fluctuations and will travel considerable distances in order to ▷

Above: Spoonbills sense prey by moving their spatulate bills underwater.
Below: Younger birds, such as the one in the center, have lighter plumage.

keep feeding conditions optimal. Spoonbills can feed any time of day, but usually feed upon the rising tide. They make grunting noises, but are otherwise fairly quiet while foraging.

After feeding and preening have been completed, the birds will take wing in small groups and fly to protected areas in the mangroves to rest or socialize. Social gestures may include bill-clappering between mated pairs and uttering a "nest relief" call when it's time to trade incubation duties on the nest. A lucky bird watcher may even observe the male presenting a stick to the female at nest sites.

I have enjoyed many hours in the field observing this magnificent species and hope that buffer zones will be added to Florida parks and refuges where the spoonbill will continue to rebound.

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Lee Kuhn is a retired executive who travels around the world photographing wildlife. An active free-lance photogapher/writer, he also teaches photography courses in Sarasota.

Right: A group of spoonbills in mangroves exhibiting territorial behavior. This behavior is a prerequisite to breeding and nest building, and the birds involved are all of breeding age.

A bird bathes while a white ibis looks on.

Florida's Endangered Botanical Heritage

By Ann Morrow

NATIVE NURSERIES

Ashe Magnolia

FACT: *"Palm Beach County serves as a foreboding example of scrub decline throughout the region: over 95 percent of that county's scrub resources have been destroyed by human activities since the turn of the century." (Raymond T. Fernald in a 1989 report on the scrub communities of the Treasure Coast Region, Florida.)*

What does this grim statistic really mean? It means that much of Florida's natural heritage has been lost to land clearing, timbering and other activities. It means that unique plant communities that once formed extensive areas are now fragmented into vulnerable islands surrounded by development. And it means that Floridians have lost another portion of the unusual flora that help define and characterize our state.

Why should we worry about plant loss anyway? Of course there are the basic ecological reasons, such as the importance of a single plant species within a community of plants and animals. Small changes in a complex system may completely alter the way the entire system functions. For example, wiregrass plays an important role in pine flatwoods by providing the fuel necessary to sustain fires that are essential to suppressing hardwood invasion. Along the coast, sea oats help to anchor dunes, providing a stable substrate for an entire ecosystem.

But there are compelling, practical reasons for preserving plants and plant communities. Wild plants are the relatives of modern crops. Agricultural research is now incorporating information gleaned from studies of these wild plant populations. When the ancestor of corn (*Zea diploperennis*) was discovered in southwest Mexico, it was cross-bred with modern corn, thus producing a perennial species. Eliminating the need for annual planting is a potential boon for farmers. Drugs prepared from a tropical forest plant, the rosy periwinkle, help treat leukemia. Other medicinal and pharmaceutical products derived from plants include antibiotics, drugs for heart diseases and anti-cancer agents. The industrial production of some oils, waxes, dyes and insecticides depends upon plant materials.

"We benefit from plant materials each time we wash our clothes, use a sunscreen lotion, paint a wall or varnish a table, travel in a plane propelled by jet engines, have the dentist make a mold of our teeth, receive a vaccination or immunization shot," said Dr. Norman Myers in an article in the Nov./Dec. 1983 issue of *The Nature Conservancy News*.

There is also a simple aesthetic reason to preserve plants — to enjoy their beauty.

Ironically, it is this love of native and introduced plants that has, in some cases, contributed to the decline of native species. Several native ferns, bromeliads and orchids are now endangered because they have been collected from the wild. Introduced species such as Australian pine, Brazilian pepper and melaleuca have rapidly spread and displaced native vegetation.

Another problem is the disruption of natural cycles. Historically, lightning-caused fires periodically swept areas of the state, a natural and essential occurrence for fire-dependent plant communities such as pine flatwoods. Today, fire prevention is the norm and some areas have accumulated such a great fuel buildup that there is an increased chance of a devastating wildfire, such as occurred in Yellowstone National Park.

Naturally occurring threats such as disease, hurricanes and freezes can wreak havoc on native plant populations. At particular risk are rare plants that naturally occur in small numbers or have very restricted ranges. For example, a fungus killed most of the Florida torreya (*Torreya taxifolia*) trees over 30 years ago. The species is now critically endangered with just over 100 trees remaining.

But, by far, it is the phenomenal, much-publicized growth and attendant development pressure that continues to be the primary reason for the loss of native plant communities in Florida. Residential and commercial development, agriculture and silviculture now dominate the landscape in most parts of the state.

What is being done to address these problems? Fortunately, at the center of this apparent maelstrom, there is a dedicated core of scientists, land managers and public and private organizations trying to effect beneficial change. While methods may vary widely, most proponents of plant preservation probably would agree that the goal of any effort should be the protection of native habitats. To this end, lists have been made, laws have been drafted, new programs have been created and old ones restructured to accommodate plants, particularly endangered and threatened species.

Historically, plant protection has been rather incidental to animal preservation. Plants may never attain the high-profile stature of the endangered panther or manatee, but protection of these animals necessitates protection of the habitat with which they are inextricably linked.

Today, habitat protection looms as one of Florida's greatest challenges. This goal may have taken on a new urgency, but land acquisition programs have been in place for a number of years. The Conservation and Recreational Lands (CARL) program, the state's major land acquisition effort, was established in 1979 as the successor to the Environmentally Endangered Lands (EEL) program. A primary purpose of the CARL program is the preservation of unique and endangered habitats within the state.

Private non-profit groups like the Nature Conservancy and the Trust for Public Land work to place land in public ownership, thereby ensuring its protection. Federal, state and local agencies have benefitted from their assistance. The Nature Conservancy also manages its own system of private sanctuaries purchased because of their value as habitat for rare plant and animal populations. These sanctuaries are monitored and managed to preserve their natural diversity.

Behind the scenes of these land transactions are the scientists who handle the enormous task of evaluating plant and animal occurrences and distributions throughout the state, thereby identifying the parcels of land most worthy of protection. These scientists may be associated with universities, with state and federal agencies or with cooperative efforts such as the Florida Natural Areas Inventory (FNAI). Created in 1981 as a joint venture between the Nature Conservancy and the Florida Department of Natural Resources and relying on a staff of plant ecologists, zoologists and data specialists, FNAI gathers and maintains information on rare and endangered species and natural communities in Florida. This information can then assist a variety of public and private agencies in their land management decisions.

In addition to preserving habitat, some organizations, such as the Center for Plant Conservation, work to conserve rare native plants by creating a collection of living plants, seeds, tissue cultures and pollen. Seeds or cuttings, not whole plants, are used to propagate plants in a botanical garden setting such as Bok Tower Gardens in central Florida. These propagation efforts provide information on a plant's life history, habitat preferences and growing requirements, thus aiding the management of wild populations. The collections have been

NATIVE NURSERIES

Needle Palm

NATIVE NURSERIES

Chapman's Rhododendron ▷

used in some experimental reintroductions.

Grants funded through the Game and Fresh Water Fish Commission's Nongame Wildlife Program also provide an avenue for plant research. Projects have included studies of the torreya tree and Curtiss' milkweed; an inventory of the plants endemic to the scrub of Florida's central ridge; and a summary document of the animals, plants and plant communities endemic to Florida. Additionally, the Commission maintains a threatened and endangered plant status listing.

And finally, through regulations that range from international treaties to local ordinances, the arm of the law exerts its protective influence. Permit requirements, fines and penalties serve to reinforce the concept that flagrant land abuse is not without its repercussions. However, the task is an enormous one. A lack of money and manpower makes enforcement difficult, and the laws do little to protect plants from destruction by landowners.

Chief among these regulations is the Endangered Species Act of 1973, enforced by the Fish and Wildlife Service and intended to protect native habitats through a system of listing, permits, recovery plans and land acquisition. At the state level there is the Preservation of Native Flora of Florida Act, administered by the Florida Department of Agriculture and Consumer Services and designed to protect against the harvest or destruction of any endangered, threatened or commercially exploited plant. Fines and penalties can go as high as $20,000 and/or one year imprisonment for violation of either act.

Florida's Litter Law of 1988 is administered primarily by the Game and Fresh Water Fish Commission's Environmental Law Enforcement Section. The law provides criminal penalties and stiff fines for persons found guilty of illegal dredge and fill operations, dumping of solid and toxic wastes, burning of plastics and rubber, and other crimes against the environment. The Commission was the first state law enforcement agency to train and assign officers to full-time criminal environmental investigation duties.

GFC

Florida Torreya

While the professionals are hard at work, there are still several things that the general public can do to make plant conservation issues a part of their lives.

1. Become educated and informed — join classes and take field trips.
2. Join or contribute money to supporting organizations. The Florida Native Plant Society is a good place to start.
3. Be a community watchdog. Remember that change can be effected through involvement in local comprehensive land use plans and ordinances.
4. Become familiar with environmental laws and keep apprised of the listing status of various flora and fauna.
5. Lobby to get projects on the CARL list.
6. Don't buy plants collected from the wild.
7. Support nurseries that encourage the use of native plants for landscaping.
8. Plant and nurture an endangered or threatened plant (available through some nurseries).

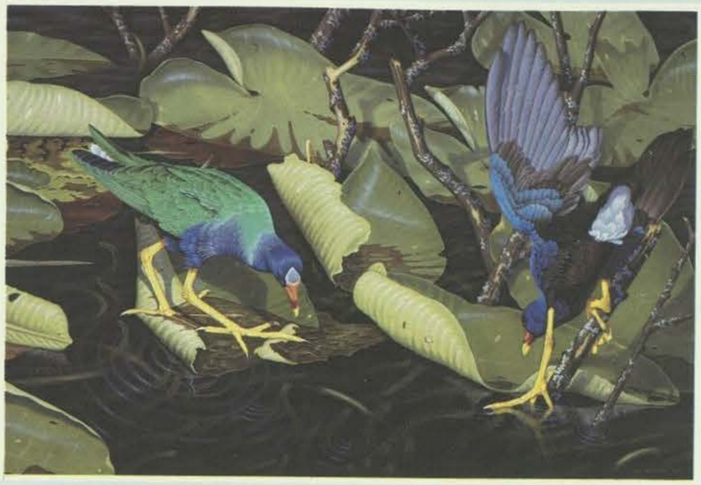
The lure of Florida's plant life has brought botanists to the state for hundreds of years. Naturalist William Bartram journeyed through north Florida and published his accounts in 1791. *The Travels of William Bartram* serves as a historic record of plant occurrence and distribution. For the most part though, there is inadequate information on the thousands of plant species found here. There are too many plants, too few botanists, inadequate funding, and not enough time to study native habitats before they are destroyed. A concerted effort to reverse these trends may yet help preserve the diverse and unique plants that give Florida its essential character.

Ann Morrow is a biologist and free-lance writer specializing in natural history topics.

NATIVE NURSERIES

Croomia

1990 Cover Art Winner



Purple Gallinules, by Dee Smith

Wildlife artist Dee Smith won the 1990 *FLORIDA WILDLIFE* magazine cover art contest with this realistic painting of a pair of purple gallinules, a protected species. The painting is so life-like that these birds searching for food seem capable of flipping a little water right out of the canvas. We've captured this moment in a limited edition signed and numbered art print. This print is available *free* when you purchase at least three subscriptions (totaling $21).

This year's cover art contest entries were especially diverse and representative of Florida's rich natural heritage. Some of the fine paintings that were entered in the contest are featured on the following pages. ▷

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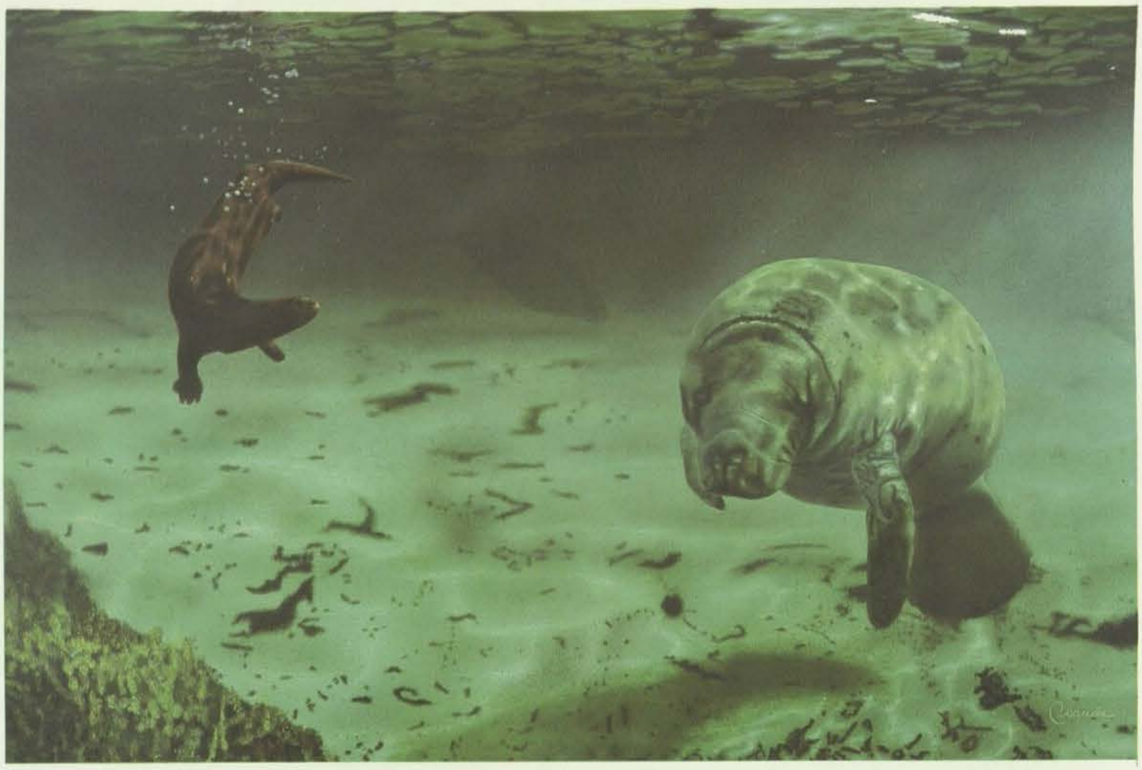
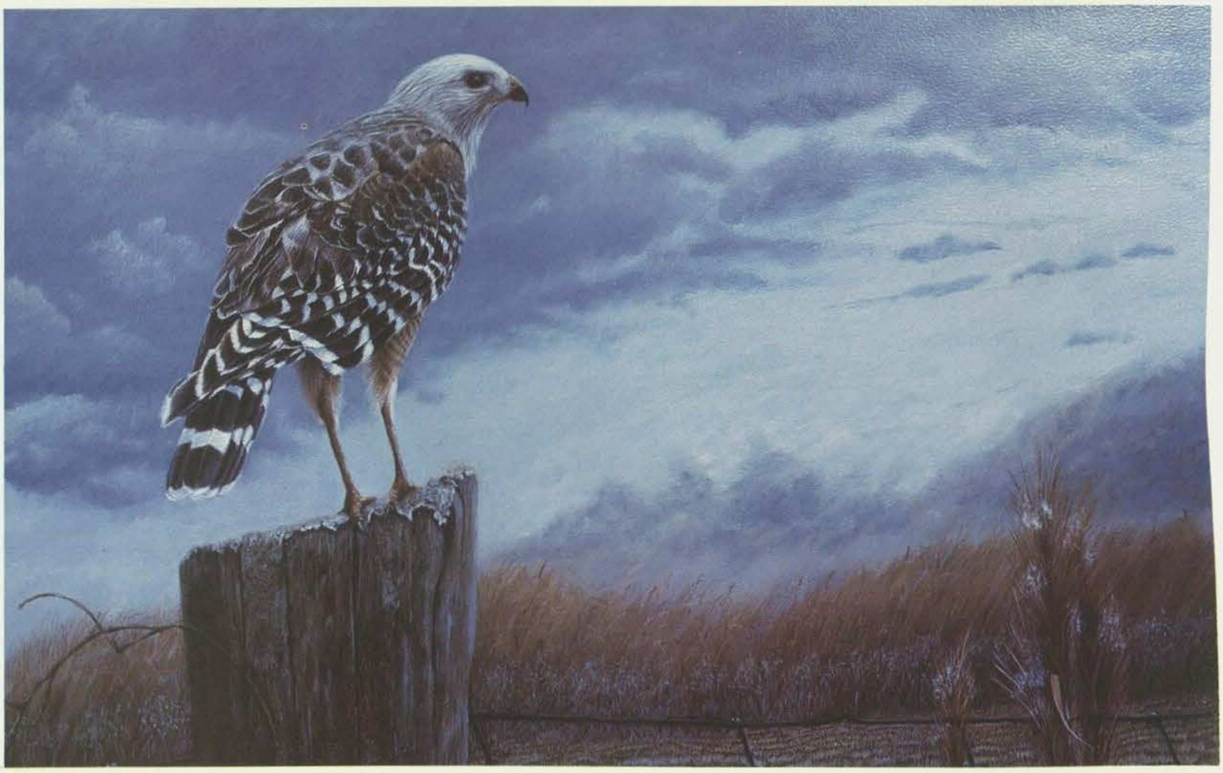
1990 Cover Art Contest

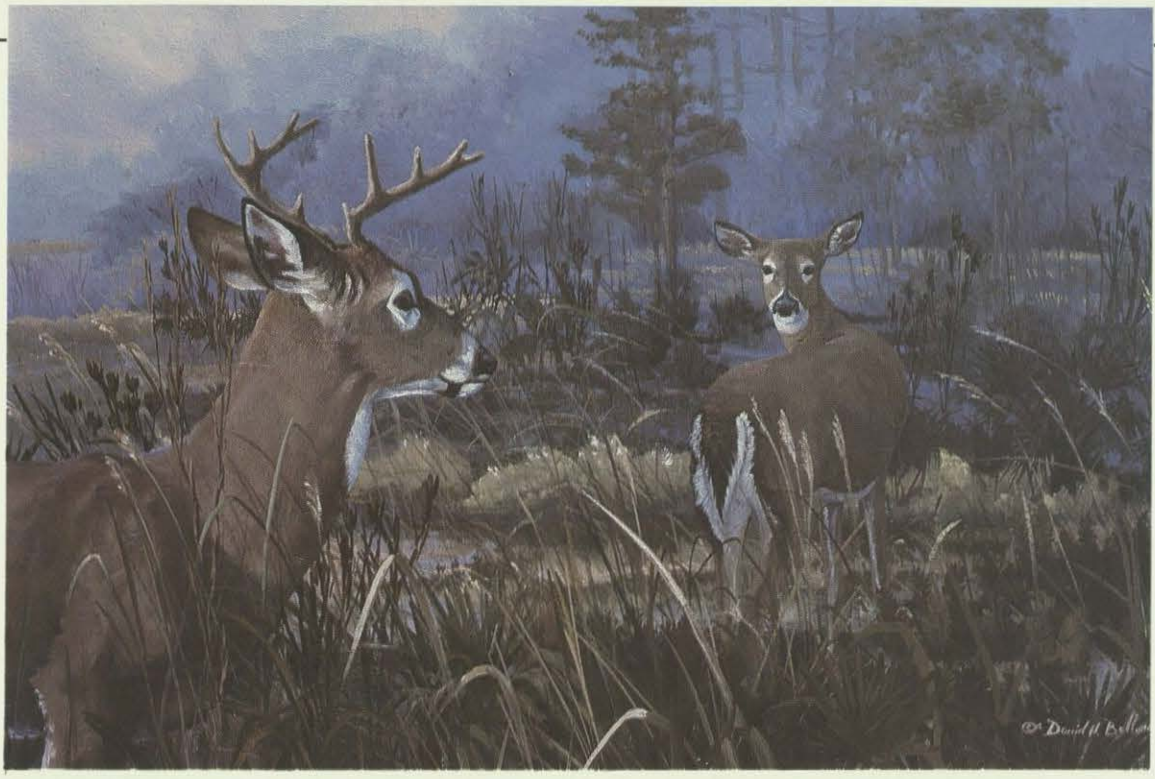
honorable mention



Aquatic Encounter (Otter and Manatee), by Claude Cobb

Red-shouldered Hawk, by Daniel Ambrose

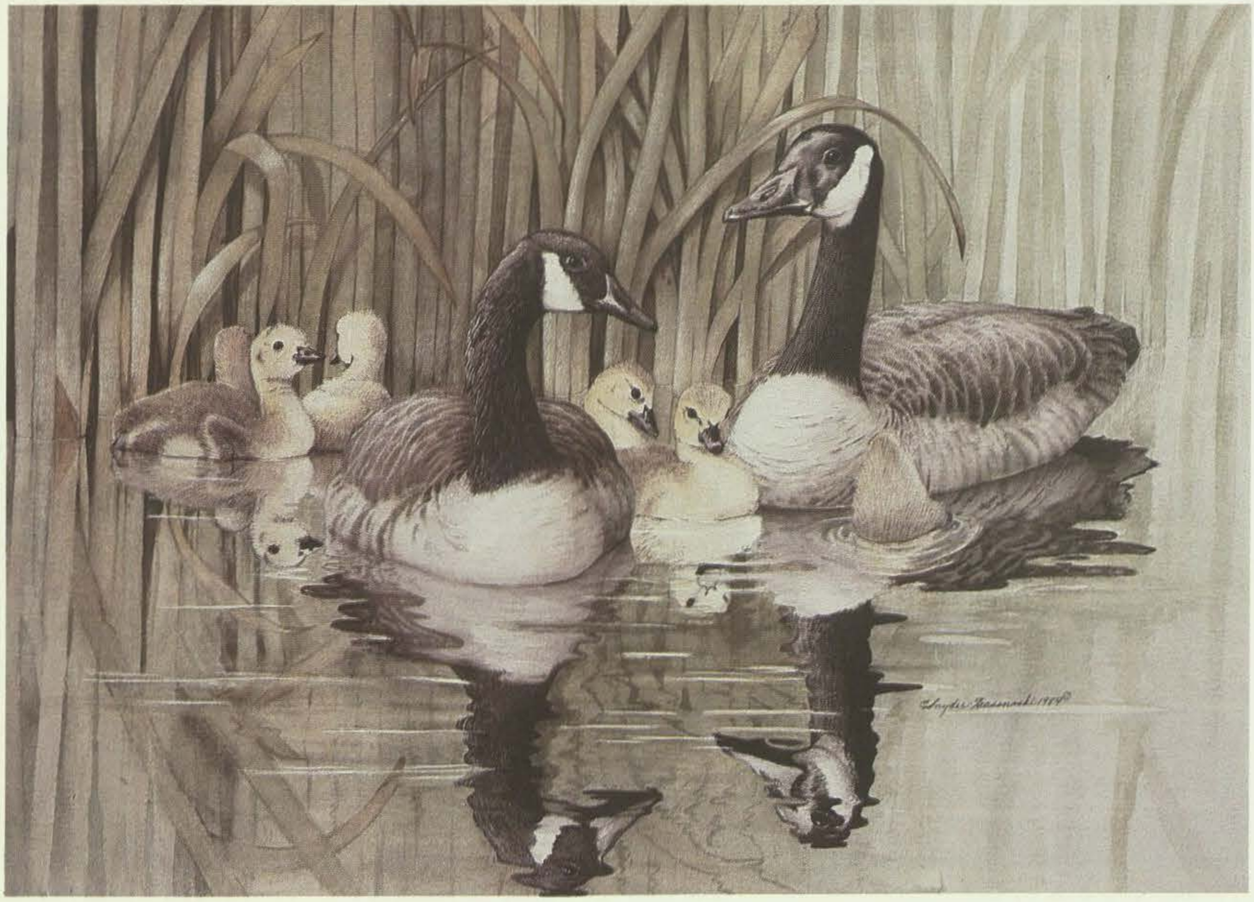




White-tailed Deer, by David Bollman

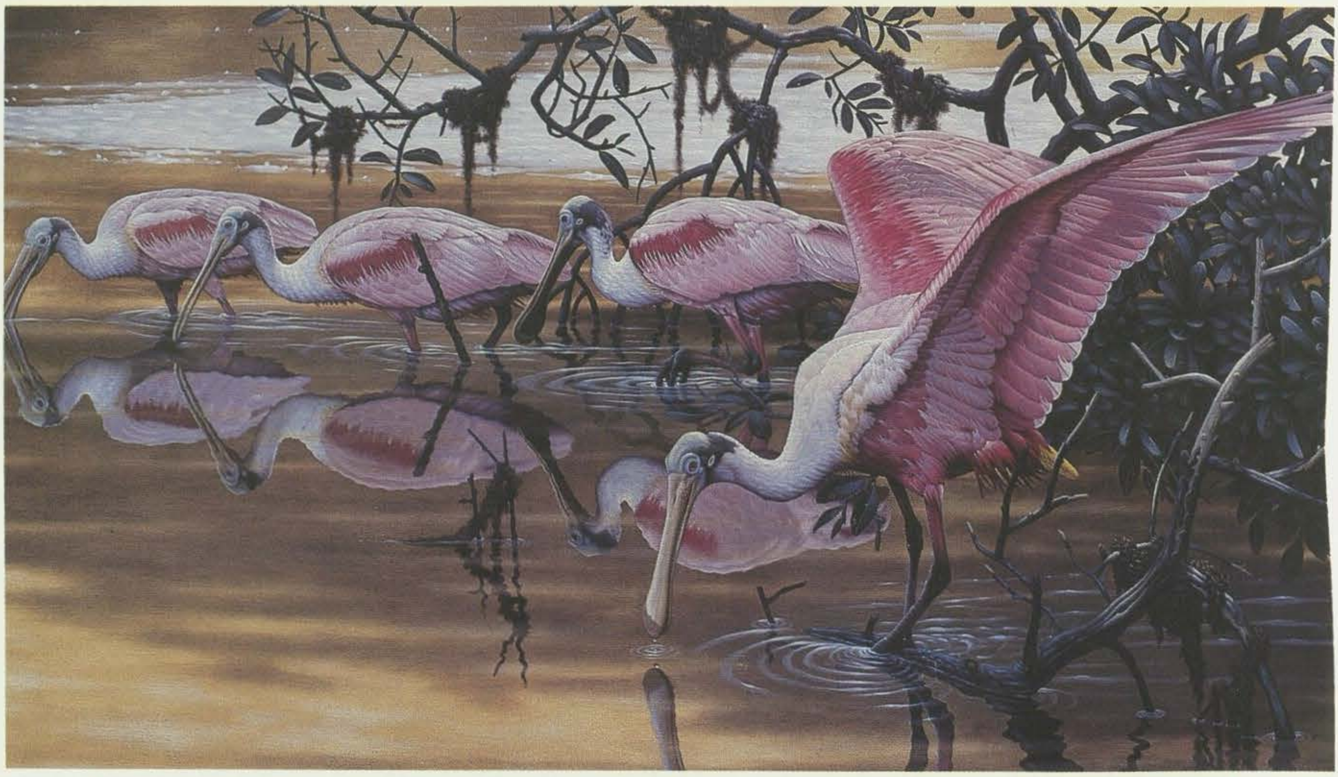
▷

Canada Geese, by Ellen Snyder Krassnoski



1990 Cover Art Contest
honorable mention

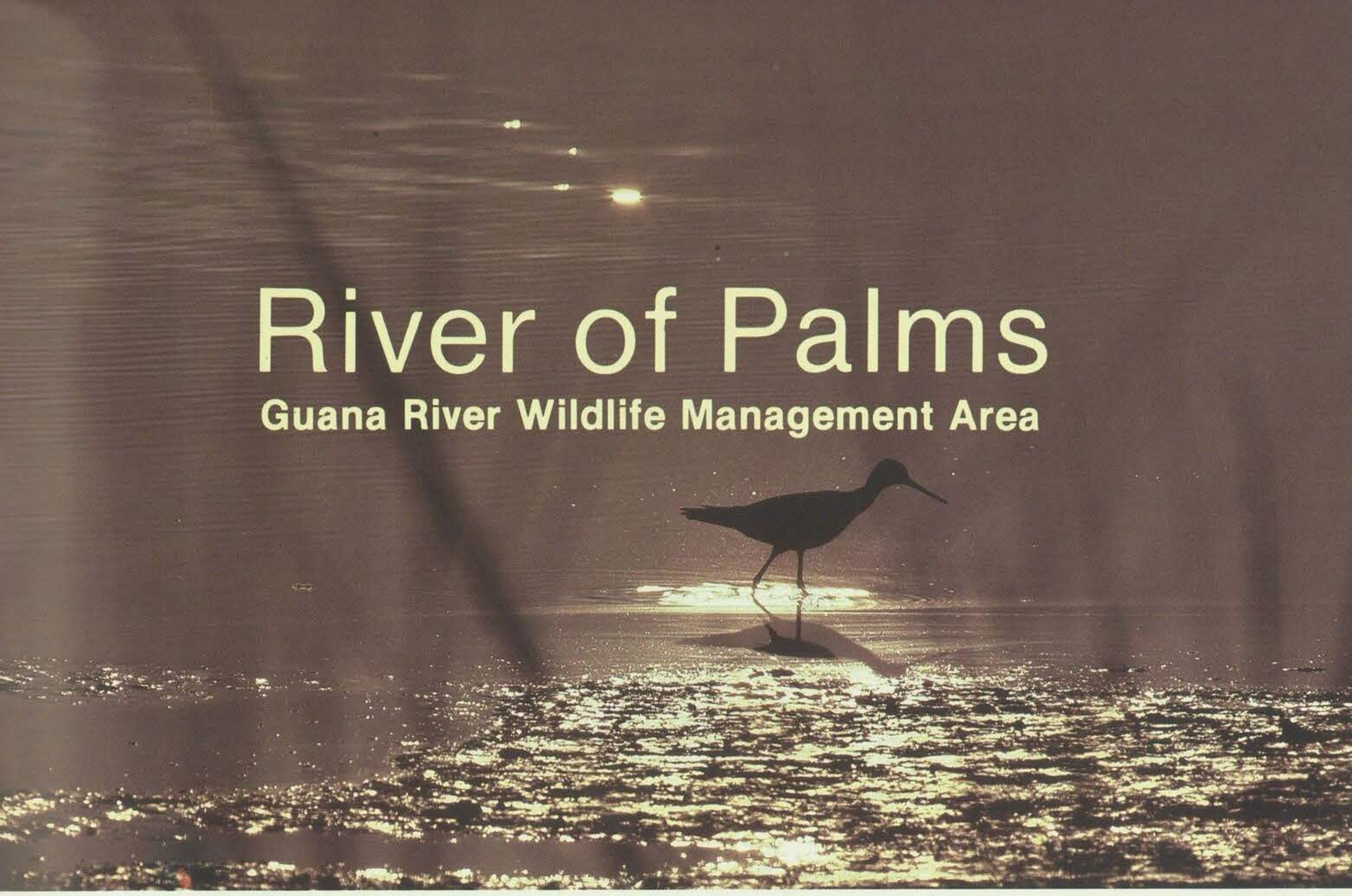
Golden Eagles, by Ellen Snyder Krassnoski



Roseate Spoonbills, by Dee Smith

River of Palms

Guana River Wildlife Management Area



Text and Photographs by Marc Epstein

Within the coastal zone of northeast Florida's "First Coast" lies an isolated, yet well-known spit of land, sea and river about 13 miles north of St. Augustine. Its name may confuse traveling tourists, but local residents know and love this beautiful landscape as "Guano."

To the early Spanish colonists, Guano River meant "River of Palms." But, its English translation could cause the area to be misconstrued as a huge river of organic excreta, so the name was later changed to Guana. No matter the name, this unique and extremely beautiful tract of land and water is a diverse combination of cultural and undeveloped resources.

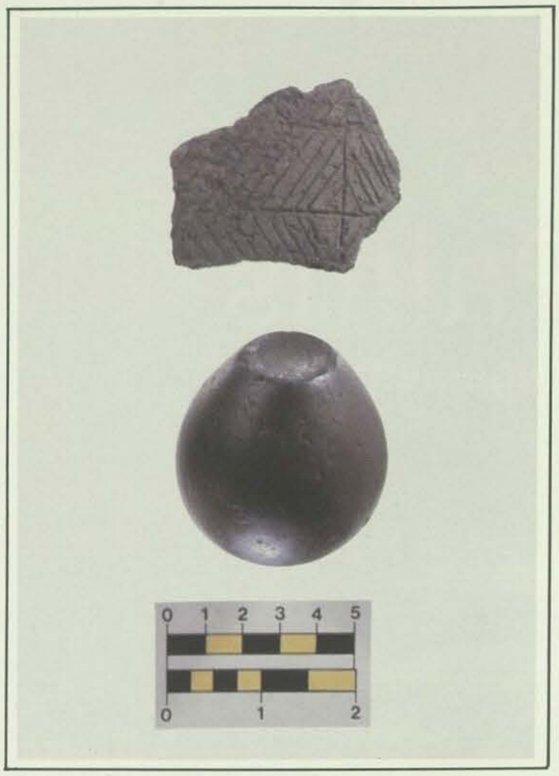
The state of Florida purchased the approximately 12,000-acre tract in four installments through the Conservation and Recreational Lands (CARL) program between 1984 and 1987 for about $50 million. It is jointly managed by the Department of Natural Resources (DNR) as a 2,300-acre state park and by the Florida Game and Fresh Water Fish Commission as a 9,815-acre wildlife management area (WMA). (*See pages 35-36 for details about the state park.*)

The Guana River WMA portion includes Guana Lake, the central and northern marshes and interior upland sections of the tract. The Commission is charged to conserve, enhance and protect the area's natural and cultural resources. This includes providing recreational opportunities for consumptive and non-consumptive users whose interests range from hunting or crabbing to bird watching or other nature studies.

The area's rich history is evident in numerous Indian mounds and middens, but the full chronicle of this island-like landscape has yet to be unearthed by archaeological researchers. Archaeologists from the state's Division of Historical Resources, working with Commission staff, have identified 13 historic and archaeological sites on the WMA. The discovery of one site in particular, the Guana River Shell Ring, indicates late Archaic Period occupation (ca. 2000-1500 B.C.).

"Shell rings are large, circular or horseshoe-shaped middens, containing pottery sherds and the discarded shells and bones of oysters, fish and animals consumed by ancient occupants," said Henry Baker, an archaeologist with the Bureau of Archaeological Research. "The fiber-tempered earthenware fragments found in the Guana River shell ring are from some of the earliest known pottery in North America."

The site represents one of the few known Archaic shell rings in Florida, possibly the only Archaic shell ring in state ownership. The site and all artifacts are fully protected by state law. The discovery of a "bola" stone suggests that ancient, nomadic Paleo-Indians may have visited the area, perhaps as ▷



"Bola" stone (below) and pottery fragment.

Guana Lake is a 2,300-acre fishing phenomenon.

early as 8000 B.C. Researchers believe that this ancient artifact may have been part of a club, but its actual function remains unknown. Fragments of early Spanish and English pottery at some sites indicate historic European occupation. The remains of old dikes and levees that were built across some of the area's ponds and marshes are indicators of cultivation of sugarcane, rice or indigo during colonial times.

Guana first became part of the WMA program in 1957, and until 1982 a large portion of the property was leased to the Commission by the State Investment Company of Jacksonville. With assistance from the landowner, numerous fish and wildlife management projects were initiated, the largest being the creation of Guana Lake, a large marsh impoundment. The Commission's lease was terminated in 1982 when ownership of the property changed hands. For a two-year period, the destiny of the property leaned precariously towards development into an urban and coastal resort community. However, with undaunted persistence, Jacksonville resident Doug Wright was able to bring county, regional and state attention to the Guana tract. Through the CARL program, the state negotiated a land purchase from Gate Petroleum, the new owner. As a result, a large portion of the area was reinstated into the WMA program in 1984.

For over 30 years, the Guana River WMA has been providing a refuge of fish and wildlife habitats and abundant public opportunities to use the area. Sportsmen holding special quota permits take part in the archery, muzzleloading gun and general gun hunts. Daily quota hunt permits are available on a first-come, first-served basis during the small game season and the migratory waterfowl season on Guana Lake.

Fishing from Guana Dam is allowed year round, but boaters on the lake are prohibited from using outboard motors larger than 10 h.p. The central and northern portions of Guana Lake are closed to all recreational activities from Nov. 2 to Feb. 28. This closure reduces disturbance to migratory waterfowl, a necessary step in restoring Guana Lake to one of north Florida's prime waterfowl wintering areas.

The ecological habitat at Guana closely resembles that of an island. It could possibly be considered a southern extension of the Sea Island coastal region of South Carolina and Georgia. One of its most incredible features is the diversity of vegetative communities, particularly the wetlands. Five of the eight vegetative communities are distinct wetlands. The largest occurs on the western boundary between the Atlantic Intracoastal Waterway (Tolomato River) and the upland peninsula. Here, miles of pristine estuarine creeks and tributaries meander in dendritic patterns throughout vast, deep green expanses of open intertidal marshlands. St. Johns County sportsmen and outdoor enthusiasts have been taking full advantage of this rich tidewater potential for decades. You will not find shoulder-to-shoulder crowds, tangled lines and short tempers here. Boaters can enjoy an almost unique experience of solitude and wilderness on this side of the "island."

On the east boundary of the WMA is 2,300-acre Guana Lake, also known as Lake Ponte Vedra. The lake is a large, brackish

Guana's interior lakes and marshes are home to a variety of waterfowl species.

impoundment stretching approximately 10 miles from South Ponte Vedra Beach to Palm Valley.

Guana Lake was created with the construction of the dam in 1957, primarily to enhance and expand wintering waterfowl habitat in northeast Florida. The lake became such an outrageous fishing phenomenon that the Commission designated it a fish management area until 1982. True testimony to the fun and excitement of the excellent fishing at Guana Dam, however, comes from being there to witness a host of bent rods, buckets full of snapping blue-claw crabs, and hefty stringers of sea trout, sheepshead, spot, croaker, flounder and black and red drum. The northern reaches of the lake also produce excellent catches of bass and bluegill. All state freshwater and saltwater fishing regulations apply in the park and WMA.

The lake has provided the best of both worlds for the angler, hunter and outdoor enthusiast alike. Migratory waterfowl and shorebirds, wading birds, alligators, otters, osprey, bald eagles and many rare and secretive species such as black-necked stilts and purple gallinules traditionally use the impoundment.

Over the past 15 years, cattails have encroached over much of the northern portion of the lake, robbing it of the diversity of plant communities beneficial to fish and wildlife. With the recent acquisition, the state has committed to restoring and enhancing this system for the maximum benefit of fish and wildlife. Proof of this commitment came with the recent replacement of the Guana Dam water-control structure, which allows water-level manipulation to regulate salinity and control undesirable vegetation.

Another restoration project was undertaken with assistance from the Commission's Waterfowl Management Section and the Ducks Unlimited (DU) Matching Aid for Restoration of States' Habitats (MARSH) program. With matching funds from the state, DU has lent assistance in restoring the interior lakes and marshes and controlling cattails on Guana Lake. DU has borne the entire cost of providing wood duck nesting boxes. The Guana River WMA projects were the state's first MARSH projects, and their design fit well into the multi-species management program being conducted at Guana.

Among the interior wetlands are six ponds that are managed as a complex of wetland habitats for fish and wildlife conservation. Spring, summer or fall, it's not uncommon to find feeding and loafing groups of endangered wood storks, roseate spoonbills, white and glossy ibis, various egrets, herons and other water birds using these ponds. The Commission's Division of Fisheries recently stocked several of the ponds to replenish the largemouth bass and shellcracker populations.

Another actively managed habitat is the pine flatwoods. With assistance from the Division of Forestry, these piney woods are control-burned annually to reduce fuel loads and enhance wildlife and scenic values.

The WMA protects a beautiful heritage for the state of Florida. Opportunities are available for hunters to bag deer, wild hog, migratory waterfowl and various small game species. Hikers, scouters, photographers and bird watchers can enjoy the maritime ecosystems with their array of birds, endangered and threatened wildlife, alligators ▷

and other aquatic reptiles and amphibians.

The WMA is currently administered through the Commission's Division of Wildlife, Bureau of Wildlife Management. Beyond game management, additional support for area programs is provided through the Division's Nongame Wildlife and Waterfowl Management sections, the Division of Fisheries and Division of Law Enforcement. The Nongame Section is also involved in the construction of a complex of nature trails at Guana. The program includes the development of an interpretive center overlooking a wood stork day-roost site and several 25-foot observation towers that overlook estuarine and managed wetland habitats. The project is designed to enhance public environmental education, appreciation and awareness through quality outdoor interpretive opportunities.

The Guana River tract narrowly escaped being developed into a resort community.

In the rapidly urbanizing atmosphere of the south Atlantic coastal zone, the Guana River tract narrowly escaped being developed into a resort community. Guana, including the state park and WMA, is undoubtedly one of the last large holdings of undeveloped Atlantic coastal barrier ecosystems. Its diversity of fish and wildlife, estuarine and freshwater ecosystems, undeveloped coastal dunes and beaches, maritime forest hammocks, pine flatwoods, sand-oak scrub thickets, cypress domes and bottomland hardwood swamps are a priceless resource.

Guana — "River of Palms" — is an outstanding legacy for present and future generations of Floridians and the nation at large.

Marc Epstein is a wildlife biologist specializing in wildlife coastal ecology. He supervises the Guana River Wildlife Management Area.

Five of Guana's eight vegetative communities are distinct wetlands, such as this estuary.

KATHLEEN BROWN

Guana River State Park

For centuries, coastal barrier islands have been prime habitat for mankind and wild animals alike. These islands provide diversity of both water and land, making them suitable for a wide variety of wildlife. However, it is the attraction of these islands to humans which has led to their downfall.

Today, development of these islands is so dense that only a few sections of undeveloped barrier island remain on Florida's east coast. One such tract, Guana River, is located midway between St. Augustine and Jacksonville. It was purchased in 1984 through the state's Conservation and Recreational Lands (CARL) program to protect it from encroaching development and to provide a place for recreation. The Florida Park Service and the Florida Game and Fresh Water Fish Commission have the joint responsibility of managing the natural and cultural resources of this property.

Each agency cooperatively manages a separate section of Guana River. The Florida Park Service is responsible for the tip of the Guana peninsula, from approximately the Guana Lake Dam to the junction of the Tolomato River and 4.7 miles of nearby coastal strand.

Bisecting this barrier island from north to south is Highway A1A. While traveling along this route, the smell of salt air wafts over the massive dunes that run parallel to the road, hinting that the ocean awaits just over the dune ridge.

In the past, people visited this beautiful, undeveloped beach every weekend, particularly during the summer months. This foot and vehicular traffic slowly wore pathways and "blowouts" that altered the natural design of the dunes, resulting in devastation for some plants and animals. These and other disturbances began to threaten the nesting areas of rare species such as the least tern, loggerhead sea turtle and leatherback sea turtle, which have nested there for years. Today, however, parking lots and boardwalks, provided by the Florida Park Service, help control the negative impacts of many human visitors.

On the west side of A1A, near Sombrero Creek and south of the peninsula tip, is a scrub area that is seemingly barren of life. This first impression is deceiving because the scrub is home to a host of rare or threatened plants and animals. The Florida scrub jay is an example of one inhabitant threatened with extinction because of loss of suitable habitat.

The scrub jay's habitat preference and unusual social behavior are two characteristics that set it apart from other birds. The scrub jay is a robin-sized bird similar in coloration to a common blue jay, but lacking the crest on the head. The scrub jay has a grayish belly and throat with a black eye patch and grayish back.

The habitat of this bird, once widespread in Florida, has diminished dramatically. This is due largely to the encroachment of housing developments that have replaced much of the coastal scrub areas throughout the state. At ▷

Guana River State Park, the scrub jay still lives in the protective, thick scrub that has been shaped by salt and wind to form a sloped canopy behind the primary dunes. This jay maximizes the area's food resources by living in an almost communal fashion. One breeding pair produces young, while all other jays in a territory help feed and protect the young.

West of A1A is a river and marsh area that, like the dune and scrub section, is of vital importance. Plants in this area not only act as a filtering agent for the river, but also serve as breeding grounds for shrimp and other small animals which are preyed upon by larger animals of the rivers and ocean. Because of its abundance of food, the marsh is a prime location to view nesting and migratory birds throughout the year. The great egret, glossy ibis, osprey and eastern screech owl are just a few of the numerous birds that may be observed on the island today.

Guana's past is also ever-present, and fragments of artifacts from early inhabitants and ancient nomadic Paleo-Indians are still being identified and studied. Historic shell middens can be found in at least 12 sites throughout this area. Remnants of early Native American, Spanish and English cultures have been found, with many more being exposed as the river and tides work away on the shore.

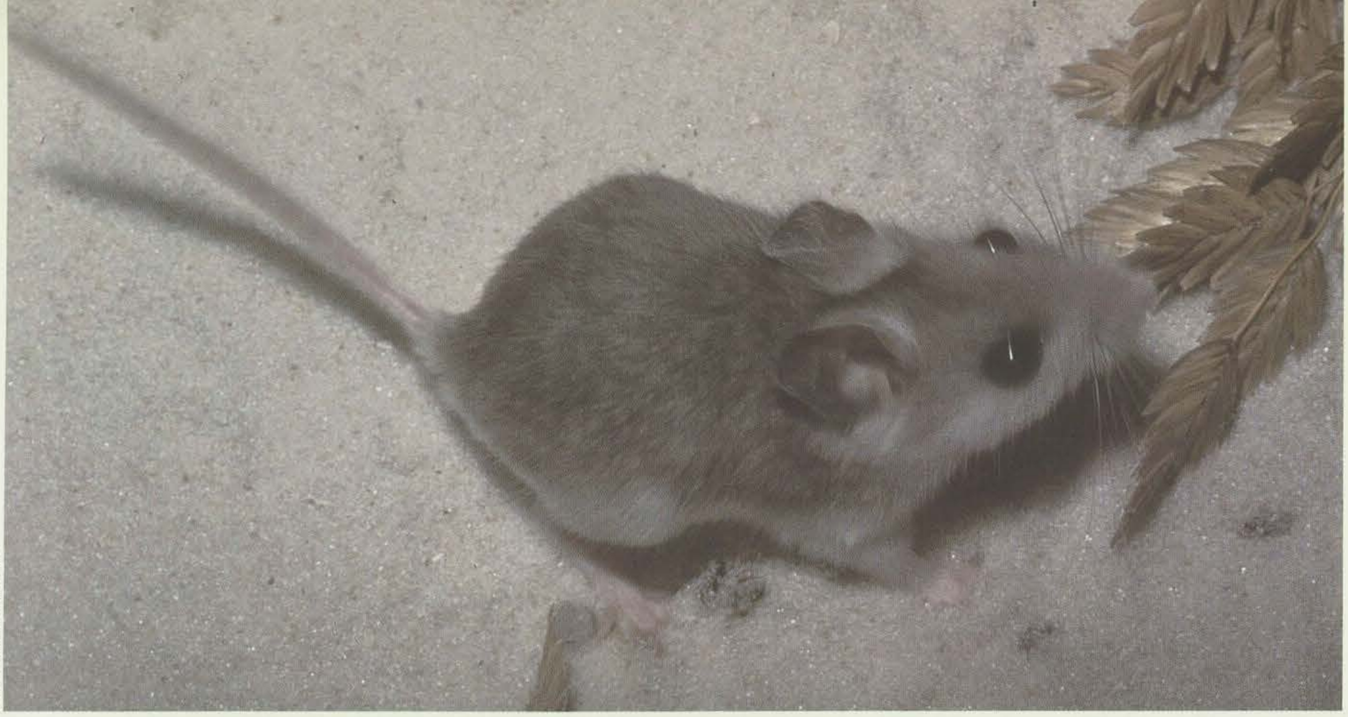
So, as you travel the east coast of Florida along A1A and pass by what looks to be a line of rather high sand dunes and marsh, remember how vitally important and increasingly rare such areas are becoming and how much of "the real Florida" we would miss if there were no Guana River State Park.

Information was compiled by staff of the Department of Natural Resources and FLORIDA WILDLIFE magazine.

KATHLEEN BROWN

The scrub jay still lives in Guana River State Park's coastal scrub areas.

WILLIAM WEBER



GEORGE FOLKERTS

Of Men and Mice

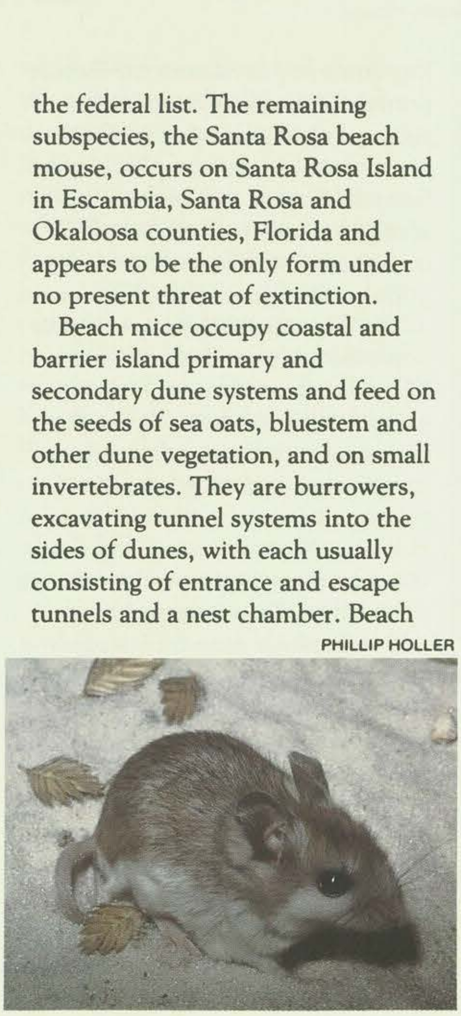
By Don A. Wood and Nicholas R. Holler

Beach mice may be the most endangered closely interrelated group of terrestrial mammals in North America. Beach mice constitute eight subspecies of the species *Peromyscus polionotus* (other subspecies are known as "old-field mice" and occur in inland habitats). Six beach mouse subspecies are native solely to Florida, another to Alabama, and the other shared by the two states. One, the pallid beach mouse, is probably already extinct. No sightings of that subspecies have been recorded since 1946, and a number of trapping efforts over the past 25 years throughout its coastal range in Flagler and Volusia counties, Florida, have not produced any specimens.

Four others — the Perdido Key beach mouse, Choctawhatchee beach mouse, Anastasia Island beach mouse and Alabama beach mouse — are classified as endangered, and another — the southeastern beach mouse — is classified as threatened by the U.S. Fish and Wildlife Service. The St. Andrews beach mouse is classified as endangered by the state of Florida, but is not yet on the federal list. The remaining subspecies, the Santa Rosa beach mouse, occurs on Santa Rosa Island in Escambia, Santa Rosa and Okaloosa counties, Florida and appears to be the only form under no present threat of extinction.

Beach mice occupy coastal and barrier island primary and secondary dune systems and feed on the seeds of sea oats, bluestem and other dune vegetation, and on small invertebrates. They are burrowers, excavating tunnel systems into the sides of dunes, with each usually consisting of entrance and escape tunnels and a nest chamber. Beach mice have white underparts and sides, with grayish upperparts, the darkness of which varies among the subspecies. They are about 5 inches in length, including a 2-inch tail.

PHILLIP HOLLER



Below: Choctawhatchee beach mouse.
Above: Perdido Key beach mouse.

Beach development has brought about the precarious status of beach mice, primarily by directly destroying or usurping beach mouse habitat, but two other, more subtle factors are also involved. Development, especially housing development, brings with it free-roaming house cats and dune system invasion by house mice. Cats are efficient predators of small mammals, and their sign is abundant in beach mouse habitats that are adjacent to development. Some degree of cat predation on beach mice in such areas no doubt occurs.

Regarding house mice, recent studies suggest that this exotic species outcompetes beach mice for living space. Those factors may be especially detrimental where only remnants of dune habitat exist. In certain cases, when development has occurred in beach mouse habitat, the resident population quickly disappeared not only from the ▷

DEPARTMENT OF NATURAL RESOURCES

Anastasia Island and Anastasia Island beach mouse.

development site itself, but also for considerable distances — often several miles — in either direction.

To address the plight of two of the endangered subspecies — the Perdido Key beach mouse and Choctawhatchee beach mouse — in 1986 the Florida Game and Fresh Water Fish Commission and the U.S. Fish and Wildlife Service jointly planned, funded and initiated a project designed to increase the survival chances of both. The U.S. National Park Service also provided substantial funding in the Perdido Key mouse effort. The method employed to achieve that objective was to reintroduce each form into areas within their respective historical ranges where suitable, protected habitat still existed.

The Perdido Key mouse once occupied the dune systems of nearly all of Perdido Key, which is situated partly in Escambia County, Florida and partly in adjacent Alabama. By the mid-1970s, however, development had severely restricted its distribution. A 1978 survey indicated a total population of fewer than 80 individuals. Then, in 1979, Hurricane Frederick struck Perdido Key (the eye passed over the Florida portion of the Key), and surveys subsequent to that event revealed that the mouse was completely gone from the Florida side of the island. It survived only in Gulf State Park in Alabama, with an estimated population of fewer than 30 mice.

The Choctawhatchee mouse once occurred fairly continuously from Choctawhatchee Bay in Okaloosa County to St. Andrews Bay in Bay County. But it had become reduced to two small and widely separated subpopulations: one in the Topsail Hill area, Walton County and the other on the western portion of Shell Island, Bay County. About 500 individuals were estimated to comprise the entire population in the late 1970s.

The re-establishment site selected for the Perdido Key form was the protected dune systems of Gulf Islands National Seashore (on the Florida side of Perdido Key), where it had occurred prior to Hurricane Frederick. The site selected for the Choctawhatchee form was the protected dunes of Grayton Beach State Recreation Area in Walton County, which was intermediate between the two remaining, but separated, subpopulations.

Annual captures and translocations of beach mice were made from fall 1986 through spring 1989. These efforts were coordinated with the assistance of the U.S. National Park Service (which administers Gulf Islands National Seashore), the Florida Department of Natural Resources (which administers the Grayton Beach and portions of the Shell Island properties), Tyndall Air Force Base (which administers the remainder of the Shell Island properties) and the Alabama Department of Conservation and Natural Resources (which administers Alabama's Gulf State Park). Captures/translocations were spread out over that three-year period to enable the donor populations to replace removals through natural reproduction.

Perdido Key mice were taken from the remaining Alabama population to the Gulf Island site and Choctawhatchee mice were taken from Shell Island to the Grayton Beach site. Seventeen pairs of Perdido Key mice and 14 pairs of

PHIL A. FRANK

Choctawhatchee mice were relocated during that time. All mice were marked for future identification, initially introduced into and briefly maintained in predator-proof enclosures to acclimate them to their new home, and then released to the wild.

In addition to the translocation efforts, seven pairs of captured Perdido Key mice (removals were spaced over a two-year period) and six pairs of Choctawhatchee mice were transported to facilities at Auburn University for captive breeding purposes. Perplexingly, the former never successfully produced young, but the latter did, with that captive colony growing to over 100 individuals. Forty of the captive-produced Choctawhatchee mice were released at Grayton Beach to augment the 28 wild-to-wild relocatees.

Surveys and live-trapping efforts at each of the re-establishment sites in 1987, 1988 and 1989 indicated the efforts were apparently a resounding success. At Gulf Islands, 55 Perdido Key mice were captured and released in July 1988 along a four-mile stretch of beach, 51 of which were unmarked and therefore the offspring or further removed descendants of translocated individuals. Continuous beach mouse sign was also found along an additional two-mile stretch of beach. Further trapping efforts there in June 1989 yielded an additional 49 captures. Considering the confirmed reproduction and expansion of the translocated population, the Perdido Key beach mouse is now apparently firmly re-established in Florida, representing the first such re-establishment of any vertebrate which had been previously extirpated from the state.

The release program for Choctawhatchee mice at Grayton Beach cannot yet be confirmed to be altogether successful. In late 1988, limited beach mouse sign was observed and one unmarked individual was captured, indicating reproduction had occurred, but those results were not substantial enough to form definitive conclusions as to the success or failure of the effort. Further live-trapping there in May 1989 resulted in only three additional captures, but extensive beach mouse sign was observed.

To ensure unqualified success, both re-established populations will be monitored over the next few years and, periodically, a few pairs will be captured and interchanged between each of the respective source and re-establishment sites. Such interchanges are necessary not only to facilitate genetic diversity (thereby genetic health) within the re-established populations, but also to ensure that such diversity in the source populations has not been compromised by removal of the translocated individuals.

Don A. Wood, the Florida Game and Fresh Water Fish Commission's Endangered Species Coordinator, administered and coordinated the planning, implementation and interagency cooperation involved in the project. Nicholas R. Holler, U.S. Fish and Wildlife Service, is leader of the Alabama Cooperative Fish and Wildlife Research Unit and was in charge of the field work phases of the beach mouse re-establishment effort. D.W. Mason, R.M. Dawson, T. Simons and M. Wooten assisted in the field work.

Crystal Lake

Home of Record Bluegills

Text and Photographs by Lt. Stan Kirkland

It was almost 11:00 p.m. April 19, 1989 as the 14-foot boat started making a wide turn. Bluegill fishermen John LeMaster and Donald Parker had been trolling live crickets in Washington County's Crystal Lake for almost three hours when LeMaster's 5½-foot spinning rod bent double. Twenty minutes later, LeMaster laid claim to the new Florida bluegill record with a specimen that tipped the scales at 2 pounds, 15¼ ounces.

LeMaster's bluegill was only slightly larger than a 2-pound, 14-ounce bluegill caught in 1985 by young Seth Branch from his grandfather's Columbia County fish pond. Nevertheless, LeMaster's bluegill set a record for the species that still stands a year later.

Crystal Lake, where LeMaster made his catch, and the story behind it are the things fishing tales are made of.

Crystal Lake is one of several dozen waters in Washington, Bay and Jackson counties that are locally referred to as sandhill ponds. These lakes or "sinks" were formed thousands of years ago when the limestone base below ground simply gave way. As you might surmise, sinks can be quite deep, and Crystal Lake is one of the state's deepest lakes. In 1984-85 the Game and Fresh Water Fish Commission measured the nearly round lake at 95 feet deep, although some older contour maps show the lake as 100 feet deep.

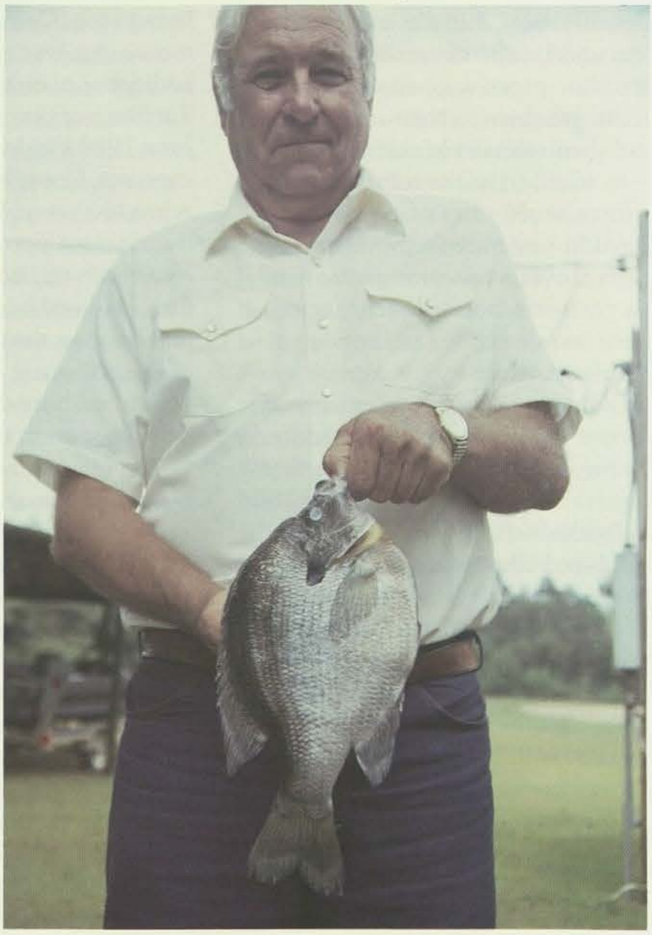
The water in Crystal Lake is unclouded, almost as clear as drinking water. Successful anglers tend to favor harder-to-see light lines when fishing sandhill ponds.

John LeMaster moved to Chipley, the county seat of Washington County, 23 years ago after retiring from the U.S. Air Force. Although he soon picked up another job, he spent his days off fishing the dozens of lakes and rivers that dot the Florida Panhandle. While he had heard about Crystal Lake and some of its big bluegills, he never fished the lake until he met Chipley native Donald Parker.

Parker, a computer engineer for the Florida Department of Transportation, owned a ¾-acre lot

John LeMaster (right) and neighbor Donald Parker fish together often.

LeMaster with his Florida record bluegill.



and trailer on Crystal Lake as a getaway place. He learned by fishing at night that he could catch as many bluegills from the lake as anyone. Sometimes he'd catch an ice chest full of big bream by slowly trolling back and forth across the lake's deep holes.

LeMaster recalls, "I'd sometimes be around the house and Donald would come by wanting to give me a mess of fish. He'd have some that weighed a pound and a half. And I don't have to tell you where he caught them."

After several similar experiences, LeMaster and Parker made their first nighttime fishing excursion to Crystal Lake in the early '80s. LeMaster remembers catching lots of fish, although he can't recall how many.

Not long after their initial trip to Crystal Lake, LeMaster bought property next to Parker's Chipley home and the pair became neighbors.

While some record-holders have exciting stories of how they were motivated to go after a big catch, LeMaster's reason was simpler.

"Donald had dug a quarter-acre fish pond, and we wanted to catch a few good bluegills to go in it," said LeMaster. "We never had any idea we'd catch a bluegill this big in the process."

On April 19 the twosome made one of their many trips to Crystal Lake. Launching LeMaster's boat at sundown, they motored diagonally across the lake to Parker's trailer and waited for dark when the boating activity would die down. Just after 7:30 p.m., they began trolling for bluegills.

LeMaster opened the bail on his spinning reel and free-spooled a live cricket on a No. 7 hook down into the lake's depths. He used only a small barrel swivel as weight. After Parker got his rig out, they moved slowly over the lake's 50- to 90-foot depths, crisscrossing back and forth. By 10:00 p.m. they had picked up only four small bluegills.

Nearing 11:00 p.m., LeMaster and Parker trolled over an area approximately 80 feet deep and with no strikes, methodically turned to head back in the opposite direction.

"I had just put my reel in a rod holder. When we turned, my line went slack as the cricket went to the bottom, and that's when he hit. I was in the middle of letting out another reel when I had to have help.

"Donald took my second reel and I started to play the fish. I use 6-pound test line and keep my drag pretty loose, so it took 20 minutes to finally get him in the boat."

The pair talked a few minutes about the size of the fish and finally decided to call it a night. They drove back to Chipley, but at such a late hour in the small town, they couldn't find an open store with certified scales on which to weigh LeMaster's trophy.

Finally at 1:00 a.m., without weighing the big bluegill, LeMaster decided to release the five fish they had caught in Parker's fish pond. All the fish swam off, but LeMaster vowed to be back at daylight to make sure that if the big bluegill didn't survive, it wouldn't become food for scavenging animals.

Ironically, LeMaster's bluegill almost wasn't a state record.

At sun-up, LeMaster grabbed a cup of coffee and made the short trek to his neighbor's fish pond. There, floating near the edge, was his prized bluegill. Five days later it was officially weighed and examined by Commission Wildlife Officer Ray Green. In addition to its hefty 2-pound, 15¼-ounce size, it measured 13¾ inches in length and 15¼ inches in girth.

Ironically, LeMaster's record bluegill would have been nothing more than a big catch with no record status had it not been for some problems confronting another angler one month earlier. And we can only speculate that the freshly-caught fish would have weighed more.

Exactly one month to the day prior to LeMaster's catch, on March 19, a fisherman and his son caught two bluegills at night from Crystal Lake. Unbelievably, not one but both bluegills were larger than the existing 2-pound, 14-ounce record.

One of the bluegills was officially weighed by a wildlife officer at 3 pounds, 7½ ounces and the other at 3 pounds, ¼ ounce. The larger of the two measured an incredible 14½ inches in length and 16 inches in girth.

Both fish were routinely examined to make sure no foreign objects such as lead were forced into the fish to inflate the weight. Both fish, however, were "clean." They were also closely scrutinized for signs that either had been taken by nets or other illegal method, but again, there didn't appear to be a problem.

In the final process of verifying the larger of the two as a state record, the angler was asked to show a valid Florida fishing license, since he admitted traveling out of county and using a rod and reel. Rules of the state's record fish program require that the fish be legally caught and the fisherman licensed if necessary.

But, the angler could produce no license. The application was held for several weeks when it became apparent that even though both fish were caught on hook and line, the angler himself was not legal.

It's probably just a matter of time before someone legally catches a larger bluegill. Until then, LeMaster can revel in the fact that he holds the state record for a popular freshwater gamefish.

That's something worth bragging about.

Editor's note: One thing that anyone who intends to fish Crystal Lake should keep in mind is that the lake is a favorite of skiers. They come from not only north Florida but south Alabama and Georgia as well to ski in the daytime. For that reason daytime fishing during the warmer months is virtually impossible.

Lt. Stan Kirkland is the public information specialist in the Commission's Northwest Region.

Record Fish Update

By Scott Hardin

As far as weight is concerned, it was not a record-breaking year for freshwater fishing in Florida. American shad was the only species whose record was broken. Actually, the record was broken three times in the St. Johns River in January and February. Anglers Don Bangs and James A. Allen both had a few fleeting days of glory before Bud Dankert hauled in the current state record shad, which weighed 5 pounds, 3¼ ounces.

Although Dankert's was the first American shad to break the 5-pound barrier in Florida, larger specimens are commonly found northward along the Atlantic coast. The current world record of 11 pounds, 3 ounces was caught in Massachusetts. American shad migrate great distances annually, moving up rivers to spawn. The St. Johns River marks the southernmost point of this species' range. Fifteen shad tagged as far away as Canada's Bay of Fundy were caught in the St. Johns River.

While the American shad is on the Commission's record fish list, it spends most of its life in the ocean and is technically a saltwater species. Consequently, a saltwater license is required of American shad anglers.

The lack of record-breaking activity gives us a chance to examine some record fish from our neighbor states, Georgia and Alabama. The table below compares records maintained by the Commission for 22 of 25 sportfish species, along with the current world records — the larger entry of either the International Game Fish Association (IGFA) or the Fishing Hall of Fame. Three species of catfish — flathead, brown bullhead and yellow bullhead — were recently added to the Florida list, and no record yet exists for them.

Upon examining the table, you may notice several peculiarities. Note that some world records were not entered as records for the state in which they were caught. Likewise, several state records would break existing world records if entered. Three species, American shad, Suwannee bass and Florida gar, have restricted ranges and are not listed under all three states. Two other species simply are not listed by one state or another.

Of the species listed, four world records came from Florida, although one of those, the Florida gar, is endemic to our state. Five were caught in Georgia, including the prestigious 22-pound, 4-ounce largemouth bass caught by George Perry in 1932. Alabama has two world records on this list.

The world record redeye bass is also known as the "shoal bass." Restricted to a small area of Florida, Georgia and Alabama, this species has not been given its own scientific name. Ironically, it is considered a subspecies of the smaller redeye or Coosa bass by IGFA and the Fishing Hall of Fame.

Species	**Florida**	**Georgia**	**Alabama**	**WORLD***
Largemouth Bass	17.27	22.25	16.50	22.25 (Ga.)
Redeye Bass	7.83	8.19	6.03	8.19 (Ga.)
Spotted Bass	3.75	8.03	8.94	9.25 (Calif.)
Suwannee Bass	3.89	3.56	NL	3.88 (Ga.)
Sunshine Bass	16.31	20.75	23.13	23.13 (Ala.)
Striped Bass	38.56	63.00	55.00	66.00 (Calif.)
White Bass	4.69	5.06	4.56	5.88 (N.C.)
Black Crappie	3.50	4.25	4.25	6.00 (La.)
Bluegill	2.95	3.31	4.75	4.75 (Ala.)
Redbreast Sunfish	2.08	1.30	NE	2.06 (Fla.)
Redear Sunfish	4.86	3.69	4.25	4.81 (Fla.)
Warmouth	2.44	2.00	1.75	2.44 (Fla.)
Channel Catfish	44.50	44.75	40.00	58.00 (S.C.)
White Catfish	16.75	3.00	10.31	17.43 (Calif.)
Chain Pickerel	8.00	9.38	6.34	9.38 (Ga.)
Redfin Pickerel	1.05	2.63	NL	2.63 (Ga.)
Florida Gar	7.00	NL	NL	21.19 (Fla.)
Longnose Gar	41.00	26.25	32.88	50.31 (Texas)
Alligator Gar	122.00	NL	140.00	279.00 (Texas)
American Shad	5.02	8.19	NL	11.25 (Mass.)
Carp	40.56	35.75	35.00	75.69 (France)
Bowfin	19.00	16.00	17.75	21.50 (S.C.)

* — As recognized by IGFA or Fishing Hall of Fame, whichever weight is heavier

NL — species not listed

NE — species listed but no entry

FLORIDA RECORD FRESHWATER FISH PROGRAM

OFFICIAL STATE RECORDS THROUGH MAY 1990

SPECIES	OFFICIAL WEIGHT	ANGLER, CATCH DATE & LOCATION
Largemouth bass **(*Micropterus salmoides*)**	17 pounds, 4¼ ounces CERTIFIED	Billy M. O'Berry, July 6, 1986 Unnamed lake, Polk County
Redeye bass **(*Micropterus coosae*)**	7 pounds, 13¼ ounces CERTIFIED	William T. Johnston, February 18, 1989 Apalachicola River, Gadsden County
Spotted bass **(*Micropterus punctulatus*)**	3 pounds, 12 ounces CERTIFIED	Dow Gilmore, June 24, 1985 Apalachicola River, Gulf County
Suwannee bass **(*Micropterus notius*)**	3 pounds, 14¼ ounces CERTIFIED	Ronnie Everett, March 2, 1985 Suwannee River, Gilchrist County
Striped bass **(*Morone saxatilis*)**	38 pounds, 9 ounces CERTIFIED	Justin McAlpin, November 15, 1979 Lake Seminole, Gadsden County
White bass **(*Morone chrysops*)**	4 pounds, 11 ounces CERTIFIED	Richard Steven Davis, April 9, 1982 Apalachicola River, Gadsden County
Sunshine bass **(white bass x striped bass hybrid)**	16 pounds, 5 ounces CERTIFIED	Thomas R. Elder, May 9, 1985 Lake Seminole, Jackson County
Black crappie **(*Pomoxis nigromaculatus*)**	3 pounds, 8 ounces CERTIFIED	Ronald Kevin Prevatt, March 5, 1988 Lake Dias, Volusia County
Flier **(*Centrarchus macropterus*)**	1 pound, 1 ounce CERTIFIED	Justin McAlpin, July 5, 1985 Lake Iamonia, Leon County
Bluegill **(*Lepomis macrochirus*)**	2 pounds, 15¼ ounces CERTIFIED	John R. LeMaster, April 19, 1989 Crystal Lake, Washington County
Redbreast sunfish **(*Lepomis auritus*)**	2 pounds, 1¼ ounces CERTIFIED	Jerrel R. DeWees Jr., April 29, 1988 Suwannee River, Gilchrist County
Redear sunfish **(*Lepomis microlophus*)**	4 pounds, 13¾ ounces CERTIFIED	Joseph (Joey) Marion Floyd, March 13, 1986 Merritt's Mill Pond, Jackson County
Spotted sunfish **(*Lepomis punctatus*)**	0 pounds, 13¼ ounces CERTIFIED	Coy Dotson, May 12, 1984 Suwannee River, Columbia County
Warmouth sunfish **(*Lepomis gulosus*)**	2 pounds, 7 ounces CERTIFIED	Tony David Dempsey, October 19, 1985 Yellow River (Guess Lake), Okaloosa County
Redfin pickerel **(*Esox americanus*)**	1 pound, ¾ ounce CERTIFIED	Robert E. Wilcox Jr., July 18, 1986 Jr. Walton Pond, Okaloosa County
Channel Catfish **(*Ictalurus punctatus*)**	44 pounds, 8 ounces CERTIFIED	Joe Purvis, May 19, 1985 Lake Bluff, Lake County
White catfish **(*Ictalurus catus*)**	16 pounds, 12 ounces CERTIFIED	Shawn James Williams, April 24, 1984 Caloosahatchee River, Lee County
Bowfin **(*Amia calva*)**	19 pounds, 0 ounces CERTIFIED	Jim Brown, November 5, 1984 Lake Kissimmee, Osceola County
American shad **(*Alosa sapidissima*)**	5 pounds, 3 ounces CERTIFIED	Bud Dankert, February 15, 1990 St. Johns River, Seminole County
Longnose gar **(*Lepisosteus osseus*)**	41 pounds, 0 ounces CERTIFIED	Evan D. Merritt, April 14, 1985 Lake Panasoffkee, Sumter County
Alligator Gar **(*Atractosteus spatula*)**	122 pounds, 0 ounces CERTIFIED	Michael Horton Booth, September 19, 1987 Escambia River, Escambia County
Florida gar **(*Lepisosteus platyrhincus*)**	7 pounds, 0 ounces CERTIFIED	Greg Rozycki, June 28, 1988 Oklawaha River, Putnam County
Largemouth bass **(*Micropterus salmoides*)**	20 pounds, 2 ounces NOT CERTIFIED	Frederick Joseph "Fritz" Friebel, May 1923 Big Fish Lake (private), Pasco County
Black crappie **(*Pomoxis nigromaculatus*)**	3 pounds, 12 ounces NOT CERTIFIED	John McGilvray, December 1964 Newnans Lake, Alachua County
Chain pickerel **(*Esox niger*)**	8 pounds, 0 ounces NOT CERTIFIED	Jimmy James, July 5, 1971 Lake Talquin, Gadsden County
Carp **(*Cyprinus carpio*)**	40 pounds, 9 ounces NOT CERTIFIED	Bernard Leon Rowan, May 24, 1981 Apalachicola River, Gadsden County

It's The Law

By Inspector Kyle Hill

Question: As an amateur taxidermist, I sometimes find dead animals that I would like to mount. I realize that I cannot keep endangered species, but how about other birds and animals that I find dead on the roadway?

Answer: In Florida, a taxidermist does not need a permit from the Florida Game and Fresh Water Fish Commission to mount nonprotected wildlife for commercial use. However, since all migratory birds are protected by the federal government, a taxidermist wishing to mount them must first obtain permission from the U.S. Fish and Wildlife Service (USFWS). The address of the USFWS is Russell Federal Building, 75 Spring Street SW, Atlanta, GA 30303.

All birds are classified as migratory, except for the starling, English sparrow, quail and turkey. Therefore, it is illegal to mount hawks, owls, herons or any other nongame migratory birds found on the roadway or brought in by a private individual. Federal law prohibits the possession of the specimens or the mounting of nongame birds for ornamental use. Public education institutions may be exempted from permit requirements in order to allow for the mounting of nongame migratory birds. However, such persons must present a letter of authorization from either the Commission or the USFWS before a taxidermist may accept such birds for taxidermy services. The taxidermist should keep a copy of the document while in possession of nongame migratory birds and never accept them for mounting without a copy of the customer's permit authorization.

It would be permissible to salvage, mount and possess the carcasses of raccoons, opossum, skunk, beaver or squirrels found as road-kills. Each specimen of wildlife and freshwater aquatic life held by a taxidermist must have a tag attached bearing the name and address of the owner and the date it was taken. These records shall be maintained and made available for inspection by officers of the Commission.

A special permit from the executive director is required to salvage or mount any fox, alligator, crocodile, weasel, round-tailed muskrat or any other species classified as threatened or endangered by Commission regulations. An exemption to this is that skulls and untanned skins of black bear or cougar, lawfully taken outside the state, may be transported and possessed when such trophies have attached to them a seal from the state where the trophy was taken or a tag bearing the name, address, hunting license number of the hunter and the date and place where the trophy was taken. Special permits are required for the possession and mounting of deer, wild turkey, quail, otter, bobcat and mink during closed seasons.

A taxidermist should never accept any protected specimen unless the customer can provide a copy of his permit authorization. If he has none, he should write to the Commission for a permit. Remember, a taxidermist is also in violation if he accepts and possesses any illegal specimen.

To recap, all birds are protected under the Migratory Bird Treaty Act except for a few species. Protected migratory birds include all birds of prey as well as song birds, such as blue jays and cardinals. These birds may not be mounted or possessed as personal specimens by private individuals. However, educational institutions such as schools and museums may accept these specimens for additions to their own collections provided they write to the Commission for permission to mount them. Permits will not be issued to mount protected migratory birds as ornamental additions to individuals' homes.

For additional specific information regarding the mounting of wildlife, contact the nearest Commission office. The addresses are listed on page 48.

Screech Owl

LEONARD LEE RUE III

Hunter Education

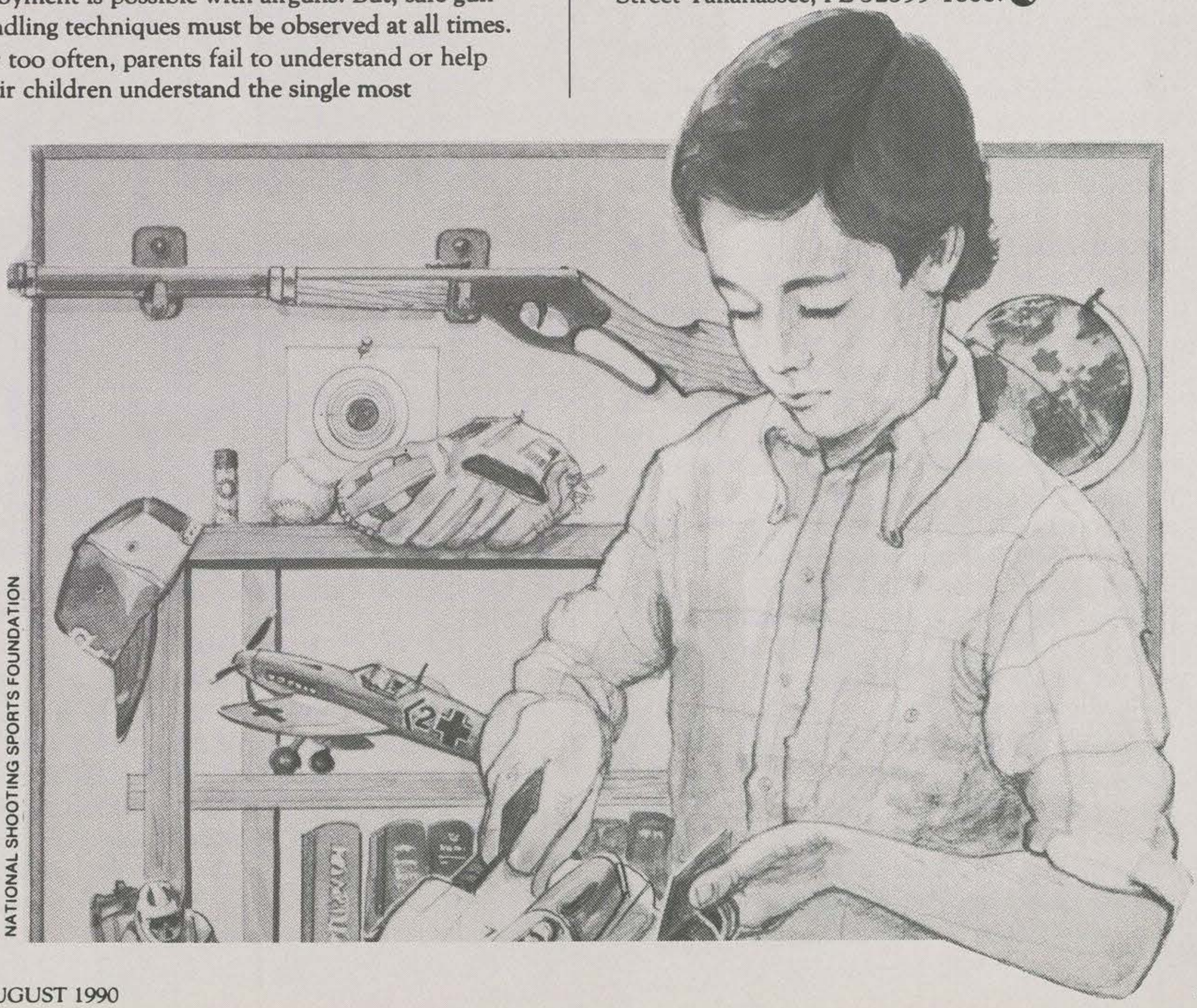
By Captain Ed Tyer

Tweety birds beware — school is out! Or, as the saying goes, "No bird's life or wing is safe 'til fall." What may be one of the most frequently violated laws is subject to its greatest abuse during these lazy days of summer. Florida law requires anyone under the age of 16 to be under the direct supervision of an adult while using a gun. The legal definition of the word "gun" is worded to include any air- or gas-operated device that propels a projectile.

Law enforcement agencies throughout the state constantly receive complaints regarding children who are terrorizing neighborhoods with BB guns, shooting anything that moves and some things that can't. Such activities violate several laws but, more importantly, they pose a danger far too often ignored by parents. During the past year these types of guns have played a part in the deaths of two Florida children.

Modern technology has developed the toy BB gun of yesterday into a high-powered device capable of competition accuracy. As with most types of guns, a lifetime of safe shooting enjoyment is possible with airguns. But, safe gun handling techniques must be observed at all times. Far too often, parents fail to understand or help their children understand the single most important rule of firearms handling: **Always point the muzzle in a safe direction.** Another reason children shoot at people, animals, homes or cars is that they are too young or immature to comprehend the consequences of their actions. Because of this, unsupervised children frequently become involved in shooting accidents. In these cases the law provides a penalty for the parents or guardians. But a small fine for the parent cannot possibly offset the guilt a child will bear knowing that he is responsible for a serious injury to a friend.

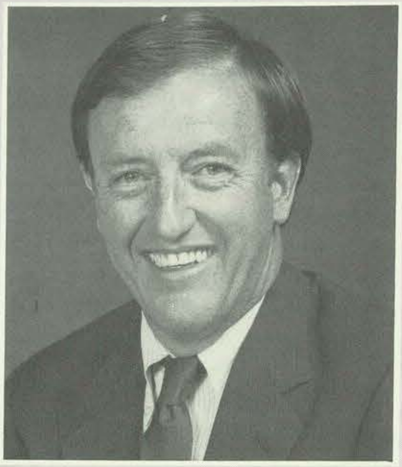
Safe gun handling is one of the topics taught in the Commission's free hunter education course. Also available is a color cartoon handout, "The 10 Commandments of Firearm Safety" and "Airgun News." The latter is provided for distribution by an airgun manufacturer and includes topics related to airguns. How to build an airgun range is included in this issue. For a free copy of this material, write to: Captain Ed Tyer, Hunter Education Coordinator, Florida Game and Fresh Water Fish Commission, 620 South Meridian Street Tallahassee, FL 32399-1600.



NATIONAL SHOOTING SPORTS FOUNDATION

Conservation Update

Compiled by Andrea H. Blount & Scott Ball



WILLIAM A. GREER

Commissioner Don Wright

It's logical that Don Wright's governmental experience and life-long love of the outdoors would prepare him for appointment to the Florida Game and Fresh Water Fish Commission.

"I grew up in rural North Carolina, living on the edge of the woods. So there was always a place to hike and a creek to fish in," said the Commissioner.

Appointed to the Commission by Gov. Bob Martinez in 1987, Wright is in his third year of a five-year term. He served as vice chairman in 1989.

He lives in Winter Springs and practices law in Orlando, specializing in construction litigation. He is a former Winter Park city commissioner. He said he still enjoys driving through the Orlando suburb and looking over some of the projects accomplished during his term in office.

"That's what I hope to do while I'm on the Game and Fresh Water Fish Commission — make some positive marks that I can look back on and feel proud about 40 years from now," he said.

Among Wright's priorities as a Commissioner is seeing that the state acquire more public land. "By doing this, not only can we protect our natural resources," he said, "we also can make more land available to the public.

"If land is owned by the public, the public should be allowed to use it in as many ways as possible. That includes not only hunting and fishing, but also hiking, photography or any other type of recreational use that doesn't harm the resource."

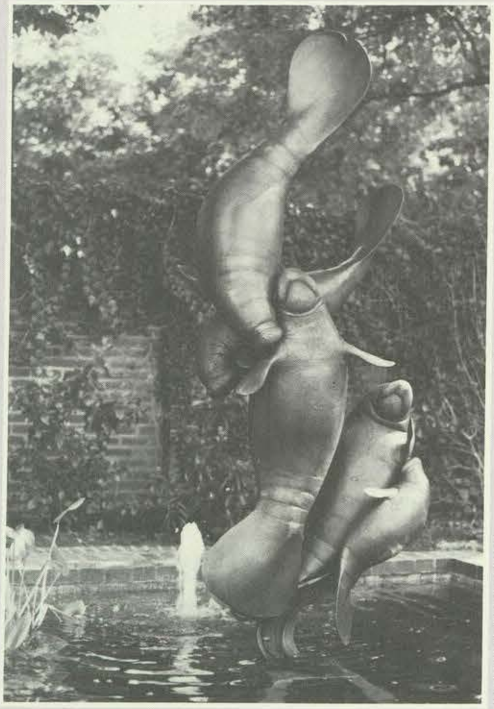
Wright's various hobbies reflect that philosophy. Like most turkey hunters, he refers to the sport as his passion. On the water, he particularly enjoys trout fishing. He and his wife, Pam, have a home in Colorado, where he also finds time for snow skiing. His most recent pastimes include outdoor photography and videography.

Governor Dedicates Manatee Sculpture

In a ceremony outside the Governor's Mansion in Tallahassee, Gov. Bob Martinez recently dedicated a large, bronze sculpture titled "Manatee Dance."

The detailed, realistic group of five twisting, turning, interactive manatees was commissioned by Gov. and Mrs. Martinez to draw attention to Florida's rare and endangered wildlife. The nearly 7-foot tall sculpture is located over a pool on the north patio area, the last stop on the Mansion tour that thousands of visitors take each year.

The artist, Tallahassee's Hugh Bradford Nicholson, worked closely with the Martinez family to produce a powerful, but engaging arrangement that works both as an art piece, on the basis of its flowing, carefully balanced formal relationships, and as a friendly, whimsical, lyrical sculpture for children. It is suggested that the best viewing angles are for persons less than 4 feet tall.



PEGGY PERKERSON

"I wanted to connote some of the wonder, pricelessness and intrinsic worth in these subjects," Nicholson said. "Some of the kids who see this playful, good-natured group of creatures may someday be in a position to dramatically affect the future of manatees or other endangered species. This sculpture will serve as a positive vehicle to introduce a great many people to an important part of a priceless living heritage they won't want their own children to miss."

Funding for the sculpture came from private donations. The artist has arranged to provide a limited edition of a smaller version of the sculpture to the Save the Manatee Club. The club will sell the smaller sculptures to fund manatee-preservation efforts.

Prepare for Dove Season

If you have an acre or so to plant for wildlife, now's the time to prepare for fall dove shoots. Browntop millet planted in early July will mature in time to attract mourning doves on their southward migration.

According to Dr. David Wright, an agronomist at the North Florida Research and Education Center at Quincy, browntop millet can withstand hot and dry conditions and still grow well. It will grow in low pH soils, Wright said, and is not particularly sensitive to low fertility. For this reason, growers frequently plant it in infertile areas they are trying to reclaim. If you plant millet for a dove field, however, Wright recommends adding both fertilizer and lime when you plant to improve the condition of the seed bed.

For more information on planting browntop millet for doves, contact your local Cooperative Extension Service, or call the regional office of the Game and Fresh Water Fish Commission in your area.

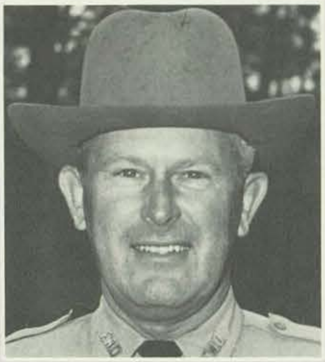
— Carolee Boyles-Sprenkel

We're Looking For A Few Good Dogs

The Commission is looking for a few good dogs to expand its K-9 program, which was initiated in July 1989 with retrievers donated by the Mitch Palmer family of Lakeland and the John Jefcoat family of Gulf Breeze.

"Sonny and Shasta proved themselves to be invaluable in the field, tracking wounded game, locating missing persons and detecting illegally-taken game," said Inspector Randy Hopkins.

Persons wishing to donate dogs to the Commission should contact Hopkins at (904) 488-6251 in Tallahassee. Candidates should be retrievers 1 to 3 years of age, in good health and possess a frantic desire to retrieve. No aggressive dogs will be considered.



In Memory

Those who knew him will greatly miss Lt. Malcom H. McCoy. "Mac," as he was affectionately known, died March 3 in Pensacola's Baptist Hospital after a lengthy illness.

Malcom McCoy was born March 10, 1917 in the north Escambia County community of Bluff Springs. He grew up in the county and served in the U.S. Navy in the South Pacific from 1942-1945.

He began work with the Game and Fresh Water Fish Commission as a wildlife officer on Nov. 15, 1946 and was assigned to Escambia County. He was promoted to wildlife officer first class in July 1960 and then to area supervisor in November 1961 in charge of Taylor, Lafayette, Suwannee and Madison counties.

Mac was promoted to the rank of lieutenant in January 1972 and transferred back to Pensacola, where he supervised wildlife officers in the panhandle's eight westernmost counties. He served the Commission faithfully until his death. He had planned to retire soon.

— Lt. Stan Kirkland

New Booklet Is Guide To Developing Shooting Range

It's hard for many sportsmen, especially in urban areas, to find a safe place to practice target shooting. For those who want to go so far as to build their own range, the National Shooting Sports Foundation has a helpful booklet.

"How to Develop New Places to Shoot" addresses every aspect of new range planning and development and expansion of existing facilities. Topics covered in the booklet include gauging the need for the facility, organization, sources of financial assistance, technical and advisory assistance, cost and implementation.

For a copy, send $1.00 to NSSF, 555 Danbury Road, Wilton, CT 06897-2217.

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Lake City, FL 32055
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Floridana

Manatees are described as mermaids, rainbows as eternal promises, and star groupings as astrological signs. Humankind has woven a rich, cultural fabric of folktales, proverbs, songs and stories to explain the unexplainable — to know the unknowable. Southerners have long accounted for the existence of Spanish moss with such lore.

One version goes like this: A villainous Spaniard purchased an Indian maiden for a yard of braid and a little bar of soap. When she fled from him, he followed her across hill, field and glade. She further tried to avoid his advances by climbing a tree, but he followed. She balanced on a slender limb and dove into a pool of water. The Spaniard was unlucky. He "snagged the whiskers of his chin," and his beard got tangled up in the tree branches, where it remains today as Spanish moss. This was just one of many variations of the folktale that I heard while growing up.

Also known as Florida moss, long moss, crepe moss, wool-crepe, vegetable hair, or old man's beard, Spanish moss is actually a misnomer, as the plant is neither moss, nor Spanish. A member of the pineapple family, it is a bromeliad, an epiphyte, or air plant. The misnamed moss is not a lichen or a parasite, and relies on its host plant for support only. The threadlike stems absorb nutrients from the air and rain. The plant produces tiny, fragrant, green flowers that bloom from April to July, though rarely seen.

In 1564, European explorer and artist Jacques LeMoyne found native Floridians wearing moss skirts. Settlers to this region adapted some native uses and customs, using it as a slow-burning insect repellant in areas where the mosquitoes were so thick that the cows headed home without being herded.

Early Floridians cleaned with it, packed it tightly to make spongy sleeping cots, and used it to insulate plants from the cold. They dried and ginned it to form braided rope or fishing net. During the Depression years, Spanish moss was gathered for filler in horse collars, car seats, mattresses and furniture. Other commercial uses included forage for cattle, extracting byproducts for ink, and wax for polishing furniture.

This versatile Southern oddity is used by craftsmen today to stuff folk toys, as hair for rag dolls, and to decorate straw wreaths (after first being baked slowly, microwaved, or sprayed to kill chiggers and other tiny insects). The fibrous plant serves an ecological purpose. Various kinds of insects use it for protection, bats roost in it and birds use it for nesting materials. It can even be used as an air-pollution early warning system when tested for airborne toxins.

And when a breath of air lifts and shapes these sodden stalactites, they become the beard of a Spanish explorer, the hair of an Indian maiden, or other whims of our imagination.

— Andrea H. Blount